SUPREME COURT, U. S.

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MICHAEL RODAK, JR.

IN THE

Supreme Court of the United States

OCTOBER TERM 1975

No. 75-1358

LOUIS W. PARKER,

Petitioner

v.

MOTOROLA, INC.,

Respondent

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIFTH CIRCUIT

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LOUIS W. PARKER,

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MOTOROLA, INC.,

Respondent

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE FIFTH CIRCUIT

PETITION

Petitioner-Plaintiff, Parker, prays that a Writ of Certiorari issue to review judgments of the United States Court of Appeals for the Fifth Circuit. The Court's opinions and judgments are dated December 8, 1975; a Petition for Rehearing filed by Petitioner on December 30, 1975, was denied by the Court of Appeals on February 2, 1976.

OPINIONS BELOW

A full trial was held in the District Court for the Southern District of Florida (Judge Norman C. Roettger) at which trial the patent claims 3, 4, 14 & 17 were adjudged valid on both a presumption of validity and on evidence presented at trial. The opinion of the District Court, Findings of Fact and Conclusions of Law are copied as Appendix B. The Fifth Circuit Court of Appeal reversed the Trial Court's finding of validity on December 8, 1975. The corrected opinion of the Court of Appeals is copied as Appendix C and is reported at 524 F.2d 518, 188 USPQ 225. The Order denying the Petition for Rehearing is included as Appendix D, and the Judgment as Appendix E.

JURISDICTION

The judgment of the Court of Appeals for the Fifth Circuit was made final by the decision rendered on December 8, 1975 and the Petition for Rehearing was finally denied by that Court on February 2, 1976. The jurisdiction of this Court is invoked under 28 United States Code, Section 1254(1), and Rule 19.1(b), the Revised Rules of the Supreme Court of the United States.

QUESTIONS PRESENTED

(1) Whether or not the Court of Appeals erred in setting aside the trial court's decision that the invention was not obvious, when the Respondent-Defendant failed to present a prima facia case of obviousness under 35

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United States Code, Section 103. This Court requires for the determination of obviousness that the level of ordinary skill in the pertinent art *at the time of the invention be resolved, Graham v. John Deere & Co.* 383 U.S. 1 (1966). In this case the Court of Appeals admitted there was no teaching reference[1] and the Petitioner asserts that there was no testimony, evidence or inferences by the Respondent of facts relating to the level of ordinary skill in the pertinent art in 1950, the critical time of this invention, that shows or infers that an ordinary skilled person would have combined separate pieces of prior art to construct the claimed invention. Respondent did not present evidence or testimony or inferences as to obviousness at the time of the invention. The Appellate Court cannot go beyond the trial court record to find that inferences drawn by an expert were related to the time of the invention, especially in a highly technical field.

(2) Whether or not the Court of Appeals erred, under Rule 52 of the Federal Rules of Civil Procedure, in setting aside particular findings of fact of the trial court in the face of substantial supportive evidence by Petitioner and in the absence of required evidence by Respondent, namely:

a) Finding 32, that, based on the prior art cited and the testimony given, the subject matter was such as to render the invention and each claim unobvious at the time of filing of the patent in suit to a person skilled in the art of intercarrier television receivers, in the absence of evidence or inferences or opinions of those skilled in the art related to the proper time of the invention.

b) Finding 37, that based on the evidence, each of

[1] 188 U.S.P.Q. 225, 236 (1976).

the Claims 3, 5, 14 and 17 performs a synergistic result, in the absence of rebuttal to an expert's testimony with regard to the synergistic result of the claimed invention.

(3) Whether or not the Court of Appeals erred, under 35 United States Code, Section 282, in destroying the presumption of validity of Claim 14, when the errors and omissions relied upon by the Court of Appeals to throw off the presumption to all claims, in mass, did not, in fact, touch or relate to virgin Claim 14. This is in direct conflict with 35 United States Code, Section 282 (amended 1965) and this Court's finding in *Leeds and Catlin v. Victor Talking Machine Co.*, (1909), 213 U.S. 301 at 318, 53 L.Ed. 805, 29 S.Ct. 495.

STATEMENT OF THE CASE

This patent infringement case involves the specific area of vestigial intercarrier television tuning systems in the year 1950, over twenty years ago, at the beginning of commercial television. Television elements and tuning circuit elements were known. The claims in suit are directed to the combination of a vestigial side band intercarrier television and tuning indicating signal circuits, a combination of elements not found to be old in the prior documentory art at the time of this invention.[2]

The very specific claims in this case not only claim the elements of the combination, but include a particular tuning indicating signal circuit connection to receive one particular signal *at one particular point* in the

[2] Finding 32.

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extremely complex vestigial side band intercarrier television circuit (where many connection points might have been chosen as shown by the positive receiver entered in this case in accordance with *Graham v. John Deere & Co.*, supra, to show unobviousness). This invention received great commercial success in the late 1960's and 1970's, even after others showed other non-infringing ways to provide a tuning system.

The Petitioner in the trial of this case precisely followed this Court's evidentiary requirements as set forth in *Graham v. John Deere & Co.*, supra, and did not rely solely on the presumption of validity, as shown by Finding 32. The Petitioner alleges as it did at trial, that the Petitioner's substantial evidence at trial clearly showed unobviousness apart from the presumption of validity. The Respondent failed to present evidence of the level of skill in the art at the time of the invention and failed to rebut evidence of the synergistic result as required by this court.

THE LAW INVOLVED

First, Petitioner urges that the Appellate Court erred by reversing the trial court in direct conflict with the requirement set forth in *Graham v. John Deere & Co., supra.*

In *Graham*, this Court stated that in determining obviousness, the level of ordinary skill in the art at the time of the invention must be resolved. The Petitioner presented evidence as to unobviousness related to the proper time, some twenty years before trial, in order to show that one of ordinary skill in the art would not have made the patented invention[3] and to show that

[3] Finding 32.

the invention had a synergistic result at the time of the invention[4]. Respondent failed to present testimony to support obviousness that was keyed to the proper time in 1950. Respondent's sole expert witness, a corporate officer, testified on direct examination but did not testify in rebuttal to the testimony of the Petitioner's expert. Therefore there is no proper basis for the Appellate Court's decision of obviousness.

The time frame requirement of *Graham v. John Deere & Co., supra,* is essential. Whether or not the claimed invention is obvious over twenty years after the invention is unrelated to the requirements of Title 35 of the United States Code and Art. I, Sec. 8 cl. 8, The Constitution of the United States of America, and the contractual agreement the inventor made with the United States of America under the Patent laws in the 1950's.

Therefore, there is no factual evidentiary basis to support the Appellate Court's reversal of the trial court under the evidentiary standards required by this Court.

Second, for the Appellate Court to set aside findings of fact that were not "clearly erroneous" is in direct conflict with the decisions of this court, *Graver Tank & Manufacturing Co. v. Linde Air Products Co.*, 336 US 271, 69 S.Ct. 535 93 L.Ed. 672, opinion adhered in part and reversed in part 339 US 605, 70 S.Ct. 854, 94 L.Ed. 1097, motion denied 70 S.Ct. 1017, rehearing denied 340 US 845, 71 S.Ct. 12, 95 L.Ed. 620.

This Court, in the *Graver Tank* case, stated that due regard must be given the trial court where credibility of the witnesses is significant. This is particularly applicable to the testimony of experts in patent cases, especially with regard to inferences that must be drawn by experts in a television circuitry case as referred to

[4] Finding 37.

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and relied upon by the Appellate Court. The witnesses in this case were skilled in the highly technical electronics art. The Appellate Court has no right to redetermine, on its own, that findings of fact were clearly erroneous, *Weller Mfg. Co. v. Wen Products, Inc.*, 231 F.2d 795, (7th Cir., 1956) or to draw its own inferences especially where there is no error in law and there is no supportive evidence for the Appellate Court's reference to inferences since such inferences were not related to the proper time frame. Weight to be accorded testimony of experts as to whether improvements embodied in patent claims were within the ordinary skill in the art at the time of the invention is primarily for the trial court, and, as in this case, Respondent's only witness was not a patent expert, *Jeoffrey Mfg. v. Graham*, 219 F.2d 511, (5th Cir., 1995) certiorari denied 350 US 826, 76 S.Ct. 55, 100 L.Ed. 738, rehearing denied 350 US 905 76 S.Ct. 176, 100 L.Ed. 794. A finding of fact cannot be set aside as "clearly erroneous" under the federal rule merely because the Appellate Court might give the facts another construction, or resolve the ambiguities differently. *U.S. v. National Ass'n of Real Estate Boards*, 339 US 485, 70 S.Ct. 711, 94 L.Ed. 1007. A finding of a trial court that new combinations that combine old constructions in a new way so as to produce an improved result which was patentable are findings of fact that the Appellate Court should not disturb where there is no evidence to the contrary, *Williams Mfg. Co. v. United Shoe Machinery Corp.* 316 US 364, 62 S.Ct. 1179, 86 L.Ed. 1537, rehearing granted 63 S.Ct. 23.

In this case the Appellate Court took inferences not keyed to the proper time frame as required by *Graham v. John Deere & Co.*, supra. Therefore the lower court's findings and conclusions of law could not have been

"clearly erroneous", especially where they were supported by substantial evidence.

The Court of Appeals also reversed the trial court's finding Number 37 on synergistic result in the face of unrebutted testimony by the Petitioner's expert witness. In such a case the trial court's findings are not clearly erroneous.

The Appellate Court obviously did not review the case in the most favorable light to the prevailing party, *Anderson v. Federal Cartridge Co.* 156 F.2d 681, (8th Cir. 1946). The Appellate Court should not base its rejection of findings on conflicting testimony of witnesses since the trial court is the proper judge of credibility, *Walling v. General Industries Co.* 330 US 545, 67 S.Ct. 883, 91 L.Ed. 1088. The Appellate Court incorrectly substituted its judgment on disputed issues of fact where there is substantial evidence to sustain the trial court's decision. It is not the Appellate Court's function to retry cases. The Court of Appeals cannot pass on, or consider de novo, evidence received on trial, nor weigh controverted evidence, but is bound merely to ascertain whether the record discloses substantial evidence sustaining the district court's fact findings, which should not be set aside unless clearly erroneous, giving due regard to the trial court's opportunity to judge the witnesses' credibility, *Lichter v. Goss*, 232 F.2d, 715, (7th Cir., 1956). The reviewing courts must constantly have in mind that their function is not to decide factual issues de novo. *Zenith Radio Corp. v. Hazeltine Research, Inc.*, 111 305 US 100, 80 S.Ct. 1562, 23 L.Ed.2d 129, on remand 418 F.2d 21, (1969).

Third, the Appellate Court erred by stripping independent Claim 14 of its presumption of validity by

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association with errors and omissions of other claims in suit. The Appellate Court's holding is in conflict with holdings of this Court, and 35 United States Code, Section 282 as amended 1965 which states in part:

> "A patent shall be presumed valid. Each claim of a patent . . . shall be presumed valid independently of the validity of other claims; . . .

The Appellate Court's opinion clearly stated that the presumption of validity as to all four claims at issue disappeared. However, one of the independent claims, Claim 14, was never changed or revised during the patent office prosecution. This single independent claim was totally unaffected by any of the omissions or inaccuracies associated with the other claims. The Court's holding is in clear contravention of the above cited statute, which expressly provides that each and every claim has a presumption of validity independent of any and all other claims associated therewith.

Since the early 1900's this court has held that each claim in a patent is an independent entity and should be treated separately.

> "One claim may be valid, all the rest invalid for want of some essential patentable attribute. But what is good remains and is unaffected by its illegal associates." *Leeds & Catlin v. Victor Talking Machine Co.*, (1909), 213 US 301 at 318, 53 L.Ed. 805, 29 S.Ct. 495.

The above quoted common law principle, as codified in the amendments to Section 282, supra, is indispensable to the progress and preservation of our technological culture. The independence of claims within a patent provide the practical considerations necessary in order to succinctly define the varied scope of the invention contained in a single patent.

Claim 14 was not amended. The record is void of any inaccuracies or omissions relating to that claim. Indeed, the idea that inaccuracies or omissions would apply to all the subject claims was neither raised, argued, nor even implied at either the trial or appellate level in this case. Conceivably the court may have misconstrued the arguments to the amended claims as being and referencing the unamended Claim 14. Arguments in the file wrapper amendments to Claim 14 did not contain inaccuracies or omissions.[5]

There is no justification for the Appellate Court to find that the presumption of validity as to Claim 14 disappeared; and for the Court to do so is in clear derogation of the express statutory language of Section 282 and the uniform construction of that statute by this and other courts.

Therefore, the Petitioner urges that the proof requirements of *Graham v. John Deere & Co.*, supra. must be met with more than lipservice alone otherwise chaos in the patent law will continue. The factual findings which must be made by a trial court where the defense of obviousness under 35 United States Code, Section 103 has been raised, are: (1) the scope and content of the prior art, (2) the differences between the prior art and the claims at issue, and (3) the level of ordinary skill in the pertinent art. Strict adherence to these factual requirements will bring uniformity to patent decisions.

The evidence of the level of ordinary skill must be specifically related to the time of the invention,

[5]Further, there is unrebutted evidence in regard to the Examiner's consideration of references and unrebutted evidence that the references were no better than those used by the Patent Examiner during the prosecution of the patent. Finding 25.

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especially when the time frame is more than a decade before trial. Scientific historical facts must be produced that relate to the time of the invention, as the Petitioner did in this case. Testimony, inferences and opinions of those skilled in the art must be keyed to the historic date. Findings of facts from inferences and opinions in highly technical subject matter must be made by the trial court where the truth and veracity of witnesses may be determined. Such testimony must be keyed to the proper level of ordinary skill in the art at the date of the invention. Otherwise, hindsight, utilizing present knowledge and argumentative rhetoric, may be used to destroy a constitutionally sanctioned contract with an inventor when the prior level of the state of the art may show a true unobvious invention.

The presumption of validity, based upon United States Patent Office actions, should not be lightly overruled without a proper factual basis.

REASONS WHY THE WRIT SHOULD BE GRANTED

The Writ should be granted because 1) a Federal question is involved, and 2) the judgment of the Court of Appeals of the Fifth Circuit in this case is in conflict with, and contrary to, the decisions of the Supreme Court of the United States in the case cited herein.

The issue before this court is the validity of a combination patent comprising a plurality of specific electrical elements combined in a novel way to produce a superior result; i.e., exceptionally fine tuning of an intercarrier television set. The Court of Appeals in reversing the trial court and in holding the patent in suit invalid did not follow the decisions of this court in applying the correct standard for determining obvious-

ness as required in *John Deere, supra.* Specifically, the Court of Appeals did not consider the fact that the Respondent failed in presentation of the defense of obviousness to make out a prima facia case of obviousness. The Respondent presented no testimony as to the state or skill of the art at the time of the invention in 1950. The *Graham v. John Deere* case, supra. spells out logical, factual tests that the trial courts should follow in reaching and acquiring factual bases for determining unobviousness or obviousness of patent claims. The trial court found that the Respondent employed the specific circuit in their color television receivers some 15 years after the original invention, even though the Respondent-Defendant owned a patent to other structurally different tuning systems for vestigial intercarrier television which could have been utilized.

1. Novelty and Unobviousness

Claims presented in the patent in question are directed to a new combination utilizing electrical elements that were known. The claim language in each of the claims at issue specifically recites the novel combination. None of the prior art references either cited by the Patent Examiner nor by the Respondent provide a basis for the teaching of this novel combination. The trial court after observing and listening to a week of testimony of experts found that the patent was a new combination and that produced a synergistic result. The Petitioner in the presentation of the case at trial produced evidence in accordance with the standards set forth by this court in *Graham v. John Deere & Co.*, supra, and did not sit back and solely rely

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on the presumption of validity. The Respondent in presenting its defense to validity although citing prior art patents not cited on the file wrapper of the patent application by the Patent Office did not provide or establish a prima facia defense utilizing the test set forth by this court in determining unobviousness. The Respondent's sole expert witness did not testify in assessing the prior art as to the state of mind of one skilled in the art as of the time of the invention, some 20 years prior to trial. It is therefore submitted that the Court of Appeals, in order to reverse the finding of the trial court as to validity, could not have from the record alone utilized the standards put forth by this court in determining obviousness or unobviousness since the record is barren of a specific factual testimony presented by the Respondent to ascertain this particular requirement. Therefore, the Court of Appeals, in reversing the trial court, reached a decision contrary to the mandates of this court in *Graham v. John Deere & Co.*, supra, in determining the factual tests for ascertaining obviousness or unobviousness. By such action the Petitioner was denied due process and his right to trial.

2. Conflict with Rule 52 Federal Rules of Civil Procedure

This case was tried before a district court judge in October of 1973: in November of 1974 the judge entered his findings of fact, Appendix B which are supported by substantial evidence and supports the judgment entered by the Trial court in favor of the Petitioner. The judge found that the patent in question was valid and further asserted that the Respondent had

rigorously contested the validity on all possible fronts. These findings were supported by the evidence as the statement hereinabove shows. The findings of fact and the judgment of trial court further support the Petitioner's allegations that the Respondent failed to establish even a prima facia defense with regard to invalidity and obviousness.

The Court of Appeals nonetheless set aside the findings of fact of the trial court and reversed the court's judgment of validity of the patent. In doing so, the Court of Appeals acted contrary to the provisions of Rule 52a and recent decisions of this court regarding Rule 52a that the findings of fact shall not be set aside unless clearly erroneous and due regard shall be given to the opportunity of the trial court to judge the credibility of the witness. By such action the Petitioner was again denied his right to a fair trial.

3. Conflict with 35 United States Code, Section 282

The Court of Appeals held in its decision that certain errors and omissions in the patent file wrapper during the prosecution of the patent application in conjunction with prior art destroyed the presumption of validity of the patent. This was based on 1) Errors and omissions and 2) that patent references were not cited by the Patent Office on the file wrapper[6], even though unrebutted evidence stated that certain references were reviewed by the Examiner and that s said references were no better than references cited by the Patent Examiner.[7] The Appellate Court erred, however in assessing and

[6] Finding

[7] Finding

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adjudging that the presumption to the entire patent and all claims fell when 35 United States Code, Section 282 specifically states that each claim of a patent shall be considered separately and presumed valid individually. The evidence of record clearly shows that Claim 14 was not effected by any errors or omissions in the Patent Office and reamined unchanged throughout the prosecution of the claim. The Court of Appeals ignored 35 United States Code, Section 282 in invalidating the patent without due regard to each particular claim of the patent. In evaluating the prior art as being more relevant than that which the Patent Office saw, no mention was made of comparing the specific claims on an individual basis with the prior art teachings. In fact, the Respondent never directly attacked the claim language, word for word, reference by reference. The Respondent blatently compared the specification of the patent at issue with the prior art, which is also contrary to the dictates of *Graham v. John Deere & Co.*, supra. If allowed, illogical decision making will continue to prevail.

CONCLUSION

This case is a mirror image of the *Bernard A. Sakrida v. Ag Pro Inc.*, 481 F.2d. 668, (5th Cir., 1975) now before this Court on a Writ of Certiorari on the Question of 35 United States Code, Section 103 and *Graham v. John Deere & Co.*, supra. Further, this case is also identical on the issues of Rule 52 of the Federal Rules of Civil Procedure in *Bernard A. Sakrida v. Ag Pro Inc., supra.*

This petition for a Writ of Certiorari should be granted so that this Honorable Court can correct these

errors on the part of the court below and give direction to the patent bar to correct the turmoil that now prevails.

Respectfully submitted,

/s/Eugene F. Malin
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One Financial Plaza, Suite 2400
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CERTIFICATE OF SERVICE

I the undersigned hereby certify that a copy of the foregoing Petition for Writ has been served via U.S. mail, postage prepaid, this 12th day of March, 1976 upon Foorman L. Mueller at 105 W. Adams Street, Chicago, Illinois 60603 and, LaValle D. Ptak at P.O. Box 20591, Phoenix, Arizona 85036.

Respectfully submitted,

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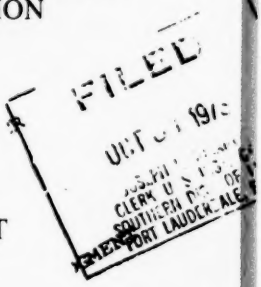
APPENDIX A

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF FLORIDA
FORT LAUDERDALE DIVISION

No. 71-603-Civ-NCR



LOUIS W. PARKER)
)
Plaintiff,)
vs.) JUDGMENT
)
MOTOROLA, INC.,)
)
Defendant.)

APPENDIX A

This cause came on to be tried before the Court sitting without a jury, and the Court having considered the evidence introduced by the parties and the trial briefs and arguments presented on their behalf, and having heretofore made and filed its Findings of Fact and Conclusions of Law, it is hereby

ORDERED, ADJUDGED, AND DECREED as follows:

1. United States Letters Patent No. 2,773,119, Claims 3, 5, 14 and 17 are good and valid in law.

2. Plaintiff, Louis W. Parker, is possessed of the entire right, title and interest in and to said Letters Patent No. 2,773,119 together with the right to sue for and collect for damages for past infringement thereof and has been possessed thereof continuously since the issuance of said Letters Patent.

3. Defendant, Motorola, Inc., has infringed Claims 3, 5, 14 and 17 Letters Patent No. 2,773,119 by making,

using and selling television receivers TS-915 and other specific Motorola television receivers stipulated to before this Court, that is, TS-915, TS-919 and TS-921 having either panel P or FTI lamp portion of panel T.

4. Plaintiff did not prove by a preponderance of evidence the infringement of Defendant, Motorola, Inc., television receivers TS-934.

5. Plaintiff, Louis W. Parker, is entitled to recover of defendant the damages which he has sustained by reason of the said defendant's manufacture, use or sale of the said infringing television receivers or their substantial equivalents, on and after April 20, 1965.

6. All other matters, including the accounting and amount to be awarded as damages, are reserved for later disposition. This judgment is final except for the accounting.

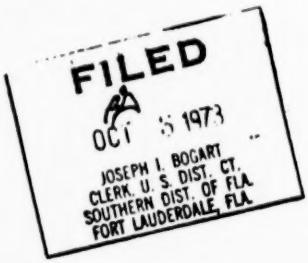
DONE AND ORDERED this 31st day of October, 1973.

APPENDIX B

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF FLORIDA

No. 71-603-Civ-NCR

LOUIS W. PARKER	)	
	)	FINDINGS OF FACT AND
Plaintiff	)	CONCLUSIONS OF LAW AS
vs.	)	TO LIABILITY
	)	
MOTOROLA, INC., et al	)	
	)	
Defendants	)	



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APPENDIX B

1. This is an action for infringement of Parker patent 2,773,119 (hereafter '119 patent) entitled Tuning System for Radio and Television Receivers, filed April 4, 1950, and issued to the plaintiff Louis W. Parker on December 4, 1956.

2. Plaintiff is a resident of the State of Florida residing at 2408 Sunrise, Fort Lauderdale, Florida. Plaintiff is a professional inventor and licensor of patents, and an industrialist, having a manufacturing operation in Fort Lauderdale for the manufacture of electronic instruments.

3. Defendant is an Illinois corporation with its principal place of business in Franklin Park, Illinois, a suburb of Chicago, Illinois. Defendant is a manufacturer of electronic products, including color television receivers TS-915 and TS-934 which are stipulated to be representative of several different models using chassis identified by said numbers.

4. The parties stipulated to other specific Motorola color television receivers which will be infringements if the TS-915 or the TS-934 receivers, or both receivers are held to infringe a valid '119 patent. The defendant sold Chassis No. TS-915 with Panel P and Panel T with (FTI) fine tuning indicator and (FTL) fine tuning lock, and Chassis No. TS-934 with Panel KA, within six years prior to filing this suit. Said chassis are vestigial side band intercarrier television AM video–FM audio receivers with tuning signal systems.

5. This patent infringement suit is for infringement by defendant of each device, including a tuning signal system and vestigial side band intercarrier television AM video–FM audio receiver utilizing the video carrier to provide a useful tuning signal.

6. The plaintiff, Louis W. Parker, is the owner of the '119 patent and claims 3, 5, 14 and 17 are representative and are the only claims considered by the court.

7. Plaintiff alleged infringement while defendant has alleged invalidity of the patent based on misrepresentations by the patentee before the Patent Office, aggregation of patents, obviousness and lack of invention over the prior art, together with a defense that the claimed patent neither infringes Chassis No. TS-915 nor Chassis No. TS-934.

History of the Application

8. When the application for the '119 patent was filed in the Patent Office on April 4, 1950 the 23 claims filed with the application as the first set of claims covered a tuning indicating system for a receiver, which system included a tuning indicator circuit with a tuning indicator. The indicator was visual as a turning eye tube, or audible as a large volume of sound emitted by the loud speaker of the receiver.

9. The 23 claims of Finding 20 were rejected as unpatentable over the prior art by the Office Action of February 9, 1951.

10. Such 23 claims were cancelled by patentee Parker on July 31, 1950, and a second set of 11 claims were presented covering a receiver in combination with circuitry for audible or visual indication of tuning.

11. The 11 claims of the second set were rejected on prior art by the Office Action of July 3, 1952.

12. By amendment filed October 6, 1952, the 11 rejected claims were cancelled, and a third set of 26 claims was introduced. These included what became

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patent claims 3, 5 and 14 here in suit, and covered the combination of the intercarrier receiver of the Parker '908 patent and a tuning indicator circuit (DX37, pp. 46-57).

13. The 3 of the 26 added claims which were patented and are here in suit were numbered:

Application Claim No.	Patent Claim No.
39	3
41	5
58	14

In the action of July 17, 1953, claim 58 was rejected on the basis that it claimed "new matter" not in the specification of the application, and claims 39 and 41 were indicated as being allowable.

14. Claims 61 to 63 were added by Amendment of October 12, 1953. Claim 61 became Patent Claim 17 in suit.

15. On January 21, 1955, the Examiner in the Patent Office rejected claims 39, 41, 58 and 61 on the prior art patent '701 to Bradley which had issued on August 15, 1944.

16. An amendment was made March 21, 1955, amending claim 39 to limit more specifically to a tuning indicating system with a turning indicator and patentee Parker argued that the amendment more clearly limited the claim to distinguish patentability over Bradley whose automatic gain control circuit had been identified as the prior art basis for rejection. Dependent Claim 41 was changed as a result of the Claim 39 limitations.

17. Such amendment urged a specific limitation for Claim 58 and interpreted the claim more narrowly to avoid Bradley.

18. Claim 61 in such amendment was said to call for the limitation:

> "... turning indicator means controlled by said selective means for effecting an indication useful in tuning the receiver when the frequency of the signals fed to the selective means approaches the frequency of the selective means."

19. The Claim 61 as then appearing, and as allowed on March 7, 1956 did not include such language which was asserted to make Claim 61 over Bradley. The last phrase actually read:

> "... and means controlled by said selective means for effecting an indication when the selective means is being fed with signals whose frequency corresponds to the resonant frequency of the selective means."

20. Claims 39, 41, 58 and 61 were allowed on March 7, 1956.

21. The following comprise the prior art cited by the Patent Office during the prosecution of the '119 patent.

UNITED STATES PATENTS

2,023,458	Yolles	Dec. 10, 1935
2,100,236	Brown	Nov. 23, 1937
2,153,783	Weyers	Apr. 11, 1939
2,160,566	Schmidt	May 30, 1939
2,173,173	Lewis	Sept. 19, 1939
2,189,300	Roberts	Feb. 6, 1940
2,190,435	Roberts	Feb. 13, 1940
2,221,096	Keall	Nov. 12, 1940
2,261,643	Brown	Nov. 4, 1941
2,264,019	Case	Nov. 25, 1941
2,285,857	Hewel	June 9, 1942
2,355,701	Bradley	Aug. 15, 1944
2,451,584	Stone	Oct. 19, 1948
2,501,416	Smith	Mar. 21, 1950
2,528,222	Foster	Oct. 31, 1950
2,632,800	Schlesinger	Mar. 24, 1953

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FOREIGN PATENTS

358,271	Italy	Apr. 11, 1938

22. The '119 patent depended upon the disclosure of the prior Parker '908 patent which was cross-referenced in the '119 patent. The defense of invalidity of such latter patent combined such prior Parker patents and the following patents, not cited by the Patent Office:

Patent Number	Patentee	Issued
2,056,607	Holmes	Oct. 6, 1936
2,121,736	Foster	June 21, 1938
2,123,001	Chittick	July 5, 1938
2,135,946	Mountjoy	Nov. 8, 1938

Publication

National Radio Institute Study Manual, 1946 Edition, page 10, Fig. 12.

23. Holmes is a single side band receiver and does not teach the combination of a tuning signal system and a vestigial side band intercarrier television receiver; Holmes reference must be tuned to the audio carrier.

24. '908 Parker does not teach the combination of a tuning signal system and a vestigial side band intercarrier television receiver.

25. Weyers and Roberts cited by the Patent Office in case in suit are references as good as Holmes.

26. Holmes classified in Patent Office Class 178-5.8 was considered by the Patent Office in view of the fact

that Class 178-5.8 was searched four times. It is a reference of record in the L. W. Parker Patent '908 which was cited in the patent in suit.

27. Holmes is an AM video and AM audio signal television receiver; plaintiff testified that an AM (amplitude modulated) video and AM (amplitude modulated) audio television receiver cannot be an intercarrier television.

28. The combination of the Chittick -001 and the L. W. Parker -908 patents cannot be combined for the following reasons:

(a) No teaching reference.

(b) Chittick reference refers to an audio radio receiver having a single carrier, not a vestigial intercarrier television receiver.

29. National Radio Article cannot be combined with the Parker -908 patent for the following reasons:

(a) No teaching reference;

(b) The Article refers to an audio radio receiver having a single carrier, not a vestigial intercarrier television receiver.

30. The Foster -736 patent cannot be combined with the Parker -908 patent for the following reasons:

(a) No teaching reference;

(b) The article refers to an audio radio receiver having a single carrier, not a vestigial intercarrier television receiver.

31. The Mountjoy -246 patent cannot be combined with the Parker -908 patent for the following reasons:

(a) No teaching reference;

(b) Mountjoy reference refers to an audio radio receiver having a single carrier, not a vestigial intercarrier television receiver.

32. The subject matter in this suit, in reference to the prior art cited and the testimony given, taken either individually, or collectively as a whole, was such as to render the invention and claims 3, 5, 14 and 17 of the patent in suit unobvious at the time of filing of the patent in suit to a person skilled in the art of intercarrier television receivers.

33. The Bradley patent is an alternate carrier television receiver and not a vestigial side band intercarrier television receiver; the Bradley patent does not teach the combination in the patent in issue.

34. The presumption of validity of the '119 patent has not been rebutted or overcome here by the testimony or exhibits.

Separate Additional Defenses

35. There is no evidence that willful, intentional or actual fraud, concealment or misrepresentation was made on the Patent Office.

36. Each of the claims 3, 5, 14 and 17 of the patent in issue are unambiguous and unrestricted by the prosecution before the Patent Office.

37. Each of the claims, 3, 5, 14 and 17 of the patent in issue are to a new combination that performs a synergistic result and therefore is not an aggregation.

Infringements

38. The two Motorola receivers were each of the superheterodyne type. The TS-915 had a neon lamp indicator which was lighted only when the picture was tuned out of a peak tuning position. The TS-934

receiver had no indicator of peak tuned position for the picture.

39. The '119 patent for a visual tuning indicator disclosed only a tuning eye tube indicator with relatively movable luminous arcs, and the four claims in suit must be interpreted in light of the patent disclosure and the prosecution of the patent.

40. The tuning eye tube circuit for television of the '119 patent is combined with a superheterodyne receiver there disclosed, for the purpose of providing a visual indicator for the operator who is manually tuning the receiver to tell him when a peak-tuned position of the picture is reached without watching the picture reproduced on the picture tube of such receiver.

41. The tuning indicator circuit of Finding 40 has no effect on the picture being tuned by manipulation of a tuning knob to peak position on the picture tube of the receiver.

42. Witnesses Claggett and Hessin for the plaintiff both gave as their opinions that the four claims in suit were infringed by these diversely different Motorola receiver circuits.

43. Witness Kraft gave his opinion that neither Motorola chassis is infringed by the claims of plaintiff's patent and gave various demonstrations in support of his testimony. Particularly impressive to the Court in support of the claim of non-infringement as to Chassis 934 is the total absence of the tuning eye on that chassis and the operation of the manual tuning system by the set when panel KA is removed.

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CONCLUSIONS OF LAW

1. The jurisdiction of this Court arises under the patent laws of the United States, 35 U.S.C., and under 28 U.S.C. Section 1338A. There is venue only as a result of defendant's stipulated waiver of venue.

2. Patent '119 comes to this Court with a presumption of validity.

3. Unfortunately for the trier of fact, the burden of proof requires to rebut the presumption of validity has been left in an expressly confused state by *Railex Corp. v. Speed Check Co.*, 457 F.2d 1040 at 1043 (5th Cir. 1972) where the Fifth Circuit held: "... we state the presumption of patent validity may be rebutted only by a quantum of proof–whether it be called clear and convincing or beyond a reasonable doubt–which is greater than a mere preponderance of the evidence."

4. The defendant in its brief to the trial court asserts that the burden is "beyond a reasonable doubt" and a body count of the cases cited at footnote 6 in *Railex* appears to support that conclusion. "Clear and convincing evidence" and "beyond a reasonable doubt" are not the same degree of proof. F. James, *Civil Procedure* §7.6 (1965). The ambiguous standard acknowledged in *Railex* has not been tuned more finely in *Harrington Mfg. Co. v. White*, 475 F.2d 788 (5th Cir. 1973) in which the Court quotes extensively from *Railex*.

5. In this case defendant has vigorously contested the validity of the patent on nearly every front possible. This Court concludes it has failed to rebut the presumption either by clear and convincing evidence or beyond a reasonable doubt.

6. It is incumbent upon plaintiff to prove infringement by a preponderence of the evidence. The Court

concludes that plaintiff has successfully done so as to Chassis TS-915 but not as to Chassis TS-934.

7. Therefore, pursuant to stipulation of the parties:

Infringement having been found by the Court as to Chassis Model TS-915, TS-919 and TS-921 Chassis having either panels P or the TFI lamp ortion of panel T also infringe plaintiff's patent.

8. The Court concludes that costs and attorneys' fees should be borne by the respective parties.

9. Final Judgment as to the issue of liability, the question of patent validity and infringement is to be entered in accordance with these Findings of Fact and Conclusions of Law.

DONE AND ORDERED at Fort Lauderdale, Florida, this 29th day of September, 1973.

APPENDIX C

Corrected Opinion

Louis W. PARKER, Plaintiff-Appellee-Cross Appellant,

v.

MOTOROLA, INC., Defendant-Appellant-Cross Appellee.

No. 74-1803.

United States Court of Appeals, Fifth Circuit.

Dec. 8, 1975.

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APPENDIX C

Appeals from the United States District Court for the Southern District of Florida.

Before TUTTLE, COLEMAN and SIMPSON, Circuit Judges.

SIMPSON, Circuit Judge:

Louis W. Parker, a professional inventor, brought suit against Motorola, Inc.,[1] alleging infringement of United States Patent No. 2,773,119 ('119), titled "Tuning System for Radio and Television Receivers". Motorola's answer denied infringement, and alleged invalidity of the '119 patent as obvious in light of prior art. Motorola's answer asserted invalidity of the patent for fraud in its procurement consisting of (a) material misrepresentations by Parker to the United States Patent Office, and (b) failure by Parker to satisfy the duty of complete candor and good faith required in the prosecution of a patent.

The parties stipulated prior to trial that the suit would be tried as to alleged infringing subject matter on the Motorola color television receivers employing chassis TS-915 as representative of the Motorola chassis TS-915, TS-919 and TS-921 each of which has a fine tuning indicator, and on Motorola chassis TS-934, as representative of those Motorola television receiver circuits which have Automatic Fine Tuning (AFT).

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[1] The complaint also named as defendants four sales subsidiaries of Motorola, Inc. However, the plaintiff voluntarily dismissed the complaint against three of the subsidiaries, and the district court dismissed the complaint as to the fourth.

The district judge found the Parker '119 patent valid, that the Motorola color television chassis TS-915 infringed the '119 patent, but that the Motorola color television chassis TS-934 did not infringe the '119 patent. The judgment was directed to be final except as to an accounting for damages for infringement, the ascertainment of which was referred to a Special Master. Motorola appeals from the judgment as to the findings of validity and infringement of the TS-915 chassis. Parker cross-appeals with regard to the finding of noninfringement by the TS-934 chassis. We reverse as to the validity of the '119 patent, and, hence, do not reach the issue of infringement. *Hughes Tool Co. v. Ingersoll-Rand Co.*, 5 Cir. 1971, 437 F.2d 1106, cert. denied 403 U.S. 918, 91 S.Ct. 2230, 29 L.Ed.2d 696.

PRESUMPTION OF VALIDITY

[1, 2] We consider initially the effect of the statutory presumption of validity normally attaching to patents which survive the scrutiny of the Patent Office. Title 35, U.S.C., Section 282. This presumption is based upon (a) the acknowledged experience and expertise of the Patent Office personnel, and (b) recognition that patent approval is a species of administrative determination supported by evidence. *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 5 Cir. 1970, 439 F.2d 1369, 1374, cert. denied 400 U.S. 956, 91 S.Ct. 353, 27 L.Ed.2d 264; *Neff Instrument Corp. v. Cohu Electronics, Inc.*, 9 Cir. 1961, 298 F.2d 82; *Georgia Pacific Corp. v. United States Plywood Corp.*, 2 Cir. 1958, 258 F.2d 124, 133, cert. denied 358 U.S. 884, 79 S.Ct. 124, 3 L.Ed.2d 112. While we have sometimes failed to define the quantum of proof necessary to rebut the

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presumption, we have held that the applicable standard is proof greater than a mere preponderance of the evidence. *Railex Corp. v. Speed Check Co.*, 5 Cir. 1972, 457 F.2d 1040, 1043, cert. denied 409 U.S. 876, 93 S.Ct. 125, 34 L.Ed.2d 128; *Hobbs v. United States Atomic Energy Commission*, 5 Cir. 1971, 451 F.2d 849, 856. The court below alternatively applied the standards of clear and convincing proof and proof beyond a reasonable doubt, and held that under either Motorola had failed to carry its burden.[2] This was the underpinning for the holding of validity of the '119 claims.

[3, 4] However, despite any ambiguity in this court's opinions as to the applicable standard of proof, we have made it clear that when a defendant in an infringement suit attacks the validity of a patent on the ground that it was issued without consideration by or presentation to the Patent Office of pertinent prior art, the reason for the presumption dissipates, and the presumption is weakened. *Harrington Manufacturing Co., Inc. v. White*, 5 Cir. 1973, 475 F.2d 788, 795, cert. denied 414 U.S. 1040, 94 S.Ct. 542, 38 L.Ed.2d 331; *Beckman Instruments, Inc., supra* at 1374; *Johns-Manville Corp. v. Cement Asbestos Products Co.*, 5 Cir. 1970, 428 F.2d 1381; *Ingersoll-Rand Co. v. Brunner & Lay, Inc.*, 5 Cir. 1973, 474 F.2d 491, 496, cert.denied 414 U.S. 865, 94 S.Ct. 125, 38 L.Ed.2d 117; *Cornell v. Adams Engineering Company*, 5 Cir. 1958, 258 F.2d 874. In these circumstances a court must as a minimum scrutinize the patent claims in suit more closely than when the presumption is at full force. *Gaddis v. Calgon Corp.*, 5 Cir. 1975, 506 F.2d 880, 885; *Garrett Corp. v.*

[2] Conclusions of Law Nos. 2, 3, 4, and 5.

American Safety Flight Systems, Inc., 5 Cir. 1974, 502 F.2d 9. The file wrapper of the Parker '119 patent discloses that the Patent Office did not consider the prior art references relied upon by Motorola in its defense of invalidity,[3] so that here the Section 282 presumption was diluted.

[5] Additionally where—as here—evidence of unconsidered prior art appears in combination with evidence of omissions or inaccuracies in the materials presented to the Patent Office in support of the application, the bases for the statutory presumption disappear. See *Armour and Company v. Swift & Co.*, 7 Cir. 1972, 466 F.2d 767; *National Filters, Inc. v. Research Products Corp.*, 5 Cir. 1967, 384 F.2d 516, 520; *Lodge & Shipley Co. v. Holstein and Kappert*, S.D.Tex. 1970, 322 F.Supp. 1039; *Ansul Co. v. Uniroyal, Inc.*, S.D.N.Y.1969, 301 F.Supp. 273, affd. 2 Cir. 1971, 448 F.2d 872, cert. denied 404 U.S. 1018, 92 S.Ct. 680, 30 L.Ed.2d 666. Because the district court ignored the effect of the above factors on the statutory presumption of validity we examine the claims of the '119 patent more carefully than would be necessary otherwise.

[6] Even though the presumption is seriously weakened we will construe the claims of the '119 patent as narrowly as possible so as to avoid the prior art to the extent that such a construction comports with reason. *Sterner Lighting, Inc. v. Allied Elec. Supply, Inc.*, 5 Cir. 1970, 431 F.2d 539, cert. denied 401 U.S. 909, 91 S.Ct. 869, 27 L.Ed.2d 807. In addition, close examination of the file wrapper history of the '119 patent is necessary not only for a proper construction of the patent claims, but also because of

[3] See note 11 *infra*.

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Motorola's contention that the patent was obtained by Parker by misrepresentations to the Patent Office. *Waldon, Inc. v. Alexander Manufacturing Co.*, 5 Cir. 1970, 423 F.2d 91, 91; *Bros. Inc. v. W. E. Grace Manufacturing Co.*, 5 Cir. 1965, 351 F.2d 208, 213, cert. denied 383 U.S. 936, 86 S.Ct. 1065, 15 L.Ed.2d 852.

THE '119 PATENT

The district court found that the '119 patent discloses, in its claims, specifications, and drawings, tuning indicator circuits which provide either a visual indication, an audible indication, or both such indications when a television or a radio receiver is manually tuned by the operator to the peak-tuned position. The '119 patent for a visual tuning indicator discloses a tuning eye indicator with relatively movable luminous arcs. The tuning eye tube circuit of the '119 patent is energized by a superheterodyne receiver, for the purpose of providing a visual indicator to tell the operator who is manually tuning the receiver when the peak-tuned position of the picture is obtained, without his need to observe the picture as it is reproduced on the picture tube of the receiver. This tuning indicator circuit is exactly that and no more. It does not affect the picture, which still must be adjusted to peak-position on the picture tube by manipulation of a tuning knob.

The television receiver employed in the '119 patent to energize the tuning indicator circuit is described as a black and white receiver with superheterodyne circuitry, i. e., having a relatively broad pass band, preferably of the intercarrier sound type. The radio receiver disclosed

in patent claim 17, here in suit, is of the frequency modulated (FM) type. The intercarrier sound receiver shown as the preferred embodiment of the '119 patent, was disclosed by Parker in U.S. Patent 2,448,908 ('908) issued on September 7, 1948. '908 expired on September 7, 1965. The '908 patent is cross-referenced in the '119 patent, and Parker stated in correspondence with the Patent Office that the '119 patent was an improvement on the prior '908 patent. The findings of the lower court in accord with the undisputed testimony at trial establish that the '119 patent is a combination patent, comprised of a television or a radio receiver and a tuning indicator circuit. The four patent claims alleged to be infringed by the Motorola chassis, claims 3, 5, 14, and 17 break down into two parts: (1) an intercarrier sound receiver, as disclosed in the '908 patent, combined with (2) a tuning indicator circuit designed to provide a visual indication of optimum tuning. Furthermore, the manual tuning system of the '119 patent is identical to that of the '908 patent.

For purposes of trial, claims 3, 5, 14, and 17 were broken down by Parker into numbered paragraphs.[4] One of Parker's expert witnesses acknowledged under cross-examination that each of the four claims in suit employs an intercarrier sound receiver as disclosed in the '908 patent. The witness testified that in claim 3 paragraphs 1-6, in dependent claim 5 paragraphs 1 and 2, in claim 14 paragraphs 1-9, and in claim 17 paragraphs 1-5 and 7, all read on the circuitry of the intercarrier sound receiver of the '908 patent.[5] The

[4] Reproduced in the Appendix, in order to aid in an understanding of the elements comprising each claim.

[5] Although the '908 patent is for a television receiver, one of patentee Parker's expert witnesses stated that it was also applicable to a radio receiver as described in claim 17 of the '119 patent, since a television receiver is a special form of radio receiver.

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remaining paragraphs of claims 3, 5, 14, and 17 describe the indicator and coupling circuitry that is combined with the intercarrier receiver. Some explanation of the basic elements of television broadcasting is helpful to an understanding of the application of the '119 patent to television receivers. We have labored to keep our explanation simple, but in order to achieve precision in dealing with technical subject matter the use of some technical terms is mandated. Basically, in television broadcast transmission, a camera tube is focused on the scene to be broadcast and converts the picture into a sequence of electrical elements which are amplified by wide band video amplifiers. These amplifiers, among other functions, furnish the input for a modulator, which modulates the video signals on the radio frequency carrier. The audio portion of the picture, picked up by means of a microphone, is also amplified and used to frequency modulate the sound carrier of the television transmitter. The picture or video signal, which is amplitude modulated (AM), and the audio or sound carrier signal, which is frequency modulated (FM), are then transmitted at a radio frequency into space for reception by a receiving antenna.

In order to conserve space in the frequency spectrum, and to utilize the maximum of the restricted channel assigned to television for the transmission of a wide-band amplitude modulated picture signal, the Federal Communications Commission has since 1945 prescribed the vestigial sideband technique of transmission. In this type of signal transmission both sidebands of the carrier signal are not transmitted, as in doubt sidebank transmission, but, rather, one of the generated side bands, which contain identical information, is transmitted and only a portion of the other sideband

adjacent to the carrier frequency is transmitted.[6] The frequency modulated audio carrier is transmitted on adjacent frequencies. As an aid to understanding of the discussion to follow, we here reproduce Figures 1, 2, 3, 4, 5 and 6 of the '119 patent.

Figure 2 of the '119 patent, reproduced herewith was chosen by Parker to show the form of the invention. It depicts a superheterodyne intercarrier sound television receiver, designed to receive vestigial sideband transmissions, combined with a tuning indicator circuit as disclosed in the '119 patent. The transmitted signals from the broadcast antenna, as described above, are picked up by the receiving antenna (1), connected to a tuner at the Front End (2) of the receiver, which converts the frequency to an intermediate frequency (IF). The signal is then amplified in the IF amplifier (3), where it receives the bulk of the amplification or gain necessary to operate the picture tube (7) and the loudspeaker (17). The amplified signal from the I.F. amplifier passes through a coupling system, which includes a coil (4) and a video detector (5). The video signal then passes through the video amplifier and D.C. restorer (6) to the picture tube (7). The audio signals taken off by lead (8), are further amplified and used to "drive" (make it function) the loudspeaker (17).

As already noted, the television receiver in the '119 patent reads on the claims of the prior Parker '908 patent, which disclosed an intercarrier sound television

[6] Figure 3 of the '119 patent, reproduced herewith, depicts graphically the acceptance curve for a television receiver designed to receive vestigial sideband signal transmissions in conformity with the requirements of the F.C.C. The picture or video carrier signal is indicated by the vertical line near 20, and the sound or audio carrier signal is indicated by the vertical line 22.

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receiver. The distinction between intercarrier television receivers and "conventional"[7] television receivers lies in whether the video and audio signals are separated prior to detection. In a "conventional" receiver the video and audio carriers are separated prior to detection so that no sound components, which may cause video interference, reach the video detector. From there the respective carrier signals are fed to separate audio or video IF (intermediate frequency) detectors. As a result, the operator of a "conventional" receiver must tune for the best sound and accept the accompanying picture. In an intercarrier sound receiver the audio carrier and the video carrier are amplified in the same IF amplifier. The two carriers are then heterodyned in the video detector and a new carrier is produced. This new carrier has an IF equal to the difference between the two carrier frequencies and contains the FM sound information, which is then led off and detected. The tuning in an intercarrier receiver is very broad, permitting the operator to tune for the best picture while retaining good sound.

Combined with the intercarrier receiver of the '908 patent in the '119 patent is a tuning indicator circuit as illustrated by Figure 2. The superheterodyne circuit in the '908 patent receiver and in the '119 patent receiver provides an IF carrier signal available at the output of the IF amplifier. Although as stated above the television

[7]The use of the term "conventional" to describe non-intercarrier sound television receivers may be misleading. The testimony at trial established that "conventional" is used to describe these receivers because they were used prior to the invention of intercarrier sound receivers. We are told that the vast majority of television receivers in use today employ intercarrier sound circuitry.

receivers in both patents have two carrier signals at the output of the IF amplifier, the tuning indicator in the '119 patent is operated by the video carrier signal. The indicator circuit is connected to the receiver by a switch (39) with the switch arm (40) in the position indicated in Figure 2. The video carrier signal passes over a line (50) through the switch and the buffer tube (51), and through a tuned output transformer, comprised of two tuned sections (52a, 52b). The signal is then fed to a diode rectifier (53) and filter (26) to the tuning indicator (27). As previously noted, the sole purpose of the tuning indicator circuitry in the '119 patent is to provide a visual or audible indication of peak or optimum tuning; the indicator circuit itself has no effect on the picture being manually tuned by the operator.

THE FILE HISTORY OF THE '119 PATENT APPLICATION

The original patent application for the '119 patent was filed by Parker on April 4, 1950, and included twenty-three claims. Those claims covered a tuning indicating system for a television or radio receiver, which encompassed a tuning indicator circuit. The original twenty-three claims were rejected by the Patent Office Examiner as unpatentable over the prior art on February 9, 1951. Patentee Parker subsequently cancelled the twenty-three claims, amended the specifications, and presented a second set of eleven claims. The amended claims covered a television or radio receiver, in combination with circuitry which provided a visual or audible indication of tuning. These claims were rejected by the Examiner by Office Action dated July 3, 1952,

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as being unpatentable over the prior art or as indefinite. By amendment, filed October 6, 1952, Parker cancelled the eleven claims, and presented a third set of twenty-three claims. This set of claims included claims 39, 41, and 58, and became final patent claims 3, 5, and 14, respectively, which Parker now asserts the Motorola chassis infringed. On July 17, 1953, claim 58 was rejected by the patent Examiner as containing "new matter" not contained in the patent specifications. Claims 39 and 41 were indicated by that action to be presently allowable. In response to this action Parker sought to traverse the rejection of claim 58 by calling the Examiner's attention to the reference to the '908 patent, disclosing an intercarrier circuit for television receivers, which appeared in the specifications of the '119 patent. In this same correspondence, dated October 19, 1953, Parker added three additional claims to the prosecution of the patent. One of these was claim 61, which became final claim 17, here in suit.

On January 21, 1955, the Examiner rejected claims 39, 41, 58, and 61 on the basis of the newly discovered Bradley Patent No. 2,355,701, since the "means for effecting an indication" in the '119 patent application was inherent in an automatic gain control circuit, in which the reproduction of both picture and sound will vary with tuning. Additionally, the Examiner again rejected claim 58 as including "new elements", since the general reference to the '908 patent was an insufficient basis for the recitation of the specific elements claimed. An amendment to the application was made by Parker on March 21, 1955, amending claim 39 and, therefore, dependent claim 41, to limit them more specifically to a tuning indicating system with a tuning indicator. In support of the allowance of those claims Parker argued that the amendment more

clearly limited the claim to distinguish patentability over Bradley, since the automatic gain control circuit disclosed in the latter patent had been identified by the Examiner as the prior art basis for rejection. The pertinent part of claim 39 after the addition of this amendment read as follows, with the language added by the amendment indicated by italics:

> "selective means peaked to a frequency on the said rising portion of said curve, the selective means being sharply peaked as compared to the width of the video modulations and being connected to the first-named means and energized by said radio frequency signal, and *tuning indicator* means controlled by said selective means for effecting an indication *useful in tuning the receiver* which varies with variations in the output of the selective means."

In the remarks accompanying the amendment Parker stated that the insertion of "tuning indicator" in claim 39 distinguished it from the Bradley patent, because the latter contemplated an automatic gain control circuit which was not *per se* a tuning indicator. Parker stated that the claims were revised "to direct them more particularly to a tuning indicator", since the absence of the tuning indicator had presumably been the basis for the rejection.[8]

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[8] Parker's remarks accompanying the amendment to claim 39 stated in part:

> "The newly cited patent to Bradley 2,355,701, is not believed to meet any of the claims as amended for the reason that Bradley contemplates an automatic gain control circuit. . . . No one has ever conceived that an automatic gain control circuit per se was a tuning indicator.
>
> In view of the fact that it is well known that an automatic gain control circuit cannot function as a tuning indicator, the rejection by the Examiner is presumably based on the fact that the claims were not properly directed to tuning indicators. In short, *the Examiner took the position that the claims failed to recite that the device was a tuning*

(continued)

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In the remarks accompanying the March 21, 1955 amendment Parker also traversed the rejection of claim 58, as containing "new matter", on the basis that it read "element for element" upon the drawings accompanying the patent application, and that the application itself "has everything shown in the prior patent '908 and is an improvement thereon". Claim 58 was also sought to be distinguished from the Bradley patent on the basis of the last clause in the claim which called for:

> "... means for *indicating* the amplitude of the current flow in said resonant means." (Emphasis added).

Claim 61 was asserted to be distinguishable over Bradley by reason of the particular language contained in that claim calling for a tuning indicator. Parker's remarks in the March 21 amendment with regard to claim 61, stated:

> "Claim 61 is patentable over Bradley since it calls for:
>
> > ... *tuning indicator* means controlled by said selective means for effecting an indication *useful in tuning the receiver* when the frequency of the signals fed to the selective means approaches the frequency of the selective means." (Emphasis added).

This distinguishing language, however, did not appear in claim 61 as it then read, nor was it ever added to that

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(footnote continued from preceding page)
indicator but used broad language whereby they could be confused with the automatic gain control of Bradley.
Consequently, applicant has revised the claims to direct them more particularly to a tuning indicator." (Emphasis added).

claim by means of an amendment. The last clause of claim 61 actually read at that time and in final claim 17:

> "and means controlled by said selective means for effecting an indication when the selective means is being fed with signals whose frequency corresponds to the resonant frequency of the selective means."

At trial patentee Parker sought to explain through testimony of William Hall (who prosecuted the patent application for him at that time) how the inaccurate quote came to appear in the March 21, 1955 correspondence. Hall testified that it was the usual practice in his office, at the time, for the attorneys not to dictate quotations from the claims, but rather in dictating correspondence relating to patent applications to instruct the stenographers where to find the claim language to be quoted and for them to copy the appropriate language. Therefore, Hall "assumed" that the stenographer had quoted the "wrong thing" in preparing the March 21 correspondence. However, the file history of the '119 patent shows that the above language never appeared in any other claim. Further, the file history indicates that neither the Patent Office nor Parker at any time in the further prosecution of the patent ever alluded to the fact that the language—purportedly appearing in Claim 61 and quoted in the remarks of March 21 urging allowance of the claim—did not actually appear in the claim either as it then read or in the final patent claim.

On December 28, 1955, the Patent Examiner, in response to the correspondence dated March 21, 1955, notified Parker that patent claims 39, 41, and several other claims were presently considered allowable. When Parker received this communication he requested that

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the patent application be passed to issue. By action dated March 7, 1956, the Patent Office notified Parker of the allowance of the '119 patent, consisting of nineteen claims including claims 39, 41, 58, and 61, and final claims 3, 5, 14, and 17.

On August 24, 1956, Parker filed an amendment after allowance under Patent Office Rule 312.[9] The Rule 312 amendment amended the last clause of claim 39, which, as we have noted above, had previously been amended so as to distinguish the Bradley patent. The claim was altered by the amendment to read:

> "selective means peaked to a frequency on the said rising portion of said curve, the selective means being sharply peaked as compared to the width of the video modulations and being connected to the first-named means and energized by said radio frequency signal, and energized by said selective means for producing a signal indicative of the tuning adjustment of said receiver and useful to effect accurate tuning thereof to a received signal."

Hence both of the limitations added by the March 21, 1955 amendment to distinguish the claim from the Bradley patent, "tuning indicator" and "useful in tuning the receiver", were eliminated. In the remarks

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[9] The Manual of Patent Examining Procedure, Section 714.16, at the time the amendment was filed, provided:

> "Rule 312. *Amendments after allowance.* Amendments after the notice of allowance of an application will not be permitted as a matter of right, but may be made, if the printing of the specification has not begun, on the recommendation of the Primary Examiner, approved by the Commissioner, without withdrawing the case from issue.
>
> The Commissioner has delegated the approval of such recommendation to the Supervisory Examiner."

accompanying the 312 amendment[10] Parker stated with regard to the last clause of claim 39:

> "The claim has also been modified in its final clause but not such as to depart from the scope of the invention."

The 312 amendment was approved by the Supervisory Examiner on August 31, 1956, and the Parker '119 patent was issued on December 4, 1956.[11]

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[10] The Manual of Patent Examining Procedure, Section 714.16(a) provided as of the time the amendment was approved:

> "Recommendations concerning any [Rule 312] amendment affecting the disclosure of the specification or drawing, or adding claims, or changing the scope of any claim shall be submitted to the Supervisory Examiner.
>
> As to amendments affecting the disclosure, the scope of any claim or that add a claim, the remarks accompanying the amendment must fully and clearly state the reasons on which reliance is placed to show: (1) why the amendment is needed; (2) why the proposed amended or new claims require no additional search or examination and (3) why the claims are patentable."

[11] The following patents comprise the prior art cited by the Patent Office during the prosecution of the '119 patent:

UNITED STATES PATENTS

2,023,458	Yolles	Dec. 10, 1935
2,100,236	Brown	Nov. 23, 1937
2,153,783	Weyers	Apr. 11, 1939
2,160,566	Schmidt	May 30, 1939
2,173,173	Lewis	Sept. 19, 1939
2,189,300	Roberts	Feb. 6, 1940
2,190,435	Roberts	Feb. 13, 1940
2,221,096	Keall	Nov. 12, 1940
2,261,643	Brown	Nov. 4, 1941
2,264,019	Case	Nov. 25, 1941
2,285,857	Hewel	June 9, 1942
2,355,701	Bradley	Aug. 15, 1944
2,451,584	Stone	Oct. 19, 1948
2,501,416	Smith	Mar. 21, 1950
2,528,222	Foster	Oct. 31, 1950
2,632,800	Schlesinger	Mar. 24, 1953

FOREIGN PATENTS

358,271	Italy	Apr. 11, 1938

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VALIDITY OF THE '119 PATENT

Congress has implemented the constitutional standard of patentability by statutes providing that the patentability of an invention depends upon its satisfying the three criteria of novelty, utility, and non-obviousness. Title 35, U.S.C., Sections 101, 102, 103. The appellant Motorola contends that the '119 patent claims at issue on this appeal are invalid under Section 103[12] because the combination of elements disclosed in those claims was obvious in light of the prior art. The prior art upon which appellant relies to support this claim consists of: (1) four patents not cited by the Patent Office or Parker in the prosecution of the '119 patent application: Holmes U.S. Patent 2,056,607, issued October 6, 1936, Foster U.S. Patent 2,121,736, issued June 21, 1938, Chittick U.S. Patent 2,123,001, issued July 5, 1938 and Mountjoy U.S. Patent 2,135,946, issued November 8, 1938; (2) the National Radio Institute Study Manual, 31FR-1 (1946); and (3) the prior Parker '908 patent. While the appellee, Parker, concedes that the '119 patent is a combination patent, he argues that the elements were combined in that patent in a new and non-obvious manner.

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[12] Title 35, U.S.C., Section 103 provides:

"A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made."

[7-9] The ultimate question of obviousness in deciding patent validity is a question of law, but resolution of the issue requires several antecedent factual determinations. *Graham v. John Deere Company of Kansas City*, 1966, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545; *Garrett Corp. v. American Safety Flight Systems, Inc.*, 5 Cir. 1974, 502 F.2d 9. The Supreme Court in *Graham*, supra, identified three factual inquiries for resolution prior to a determination of the ultimate issue of obviousness under Section 103: (1) the scope and content of the prior art, (2) the differences between the prior art and the claims at issue, and (3) the level of ordinary skill in the art at the time the patent application was filed. 383 U.S. at 17, 86 S.Ct. at 694, 15 L.Ed.2d at 556. See *Anderson's Black Rock, Inc. v. Pavement Salvage Co.*, 1969, 396 U.S. 57, 62, 90 S.Ct. 305, 308, 24 L.Ed.2d 258, 262; *Metal Arts Co. v. Fuller Co.*, 5 Cir. 1968, 389 F.2d 319, 321; *National Filters, Inc. v. Research Products Corp.*, 5 Cir. 1967, 384 F.2d 516, 517.[13] These factual decisions by the trial court are binding upon an appellate court unless clearly erroneous. Rule 52(a), F.R.Civ.P.; *Stamicarbon, N. V. v. Escambia Chemical Corp.*, 5 Cir. 1970, 430 F.2d 920, 926-28, cert. denied 400 U.S. 944, 91 S.Ct. 245, 27 L.Ed.2d 248. The ultimate legal questions of (a) validity versus invalidity

[13] Secondary considerations such as commercial success by the patentee and the failure of others to satisfy long felt needs of the industry, although relevant to determining obviousness are not essential to that determination. *Graham v. John Deere Company of Kansas City*, 1966, 383 U.S. 1, 17-18, 86 S.CT. 684, 694, 15 L.Ed.2d 545, 556; *Ingersoll-Rand Company v. Brunner & Lay, Inc.*, 5 Cir. 1973, 474 F.2d 491, 495, cert. denied 414 U.S. 865, 94 S.Ct. 125, 38 L.Ed.2d 117.

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and (b) non-obviousness versus obviousness of the invention as a whole depend for their solution in turn upon the result of such factual determinations. *Graham*, supra; *American Seating Co. v. Southeastern Metals Co.*, 5 Cir. 1969, 412 F.2d 756. See *Ziegler v. Phillips Petroleum Co.*, 5 Cir. 1973, 483 F.2d 858, 867, cert. denied 414 U.S. 1079, 94 S.Ct. 597, 38 L.Ed.2d 485.

[10] We have distinguished between obvious and non-obvious devices on the basis of "whether 'creative', as opposed to 'mechanical', skills were required to make them." *Becton, Dickinson & Co. v. Sherwood Medical*, 5 Cir. 1975, 516 F.2d 514, 518. Hence, in order to satisfy the non-obviousness requirement of Section 103, the device must evidence more skill and ingenuity than that possessed by an ordinary mechanic having skill in the relevant art at the time of the invention. *A G Pro, Inc. v. Sakraida*, 5 Cir. 1973, 474 F.2d 167, 171, supplemented on petition for rehearing, 5 Cir. 1973, 481 F.2d 668.

[11-13] Furthermore, since the '119 patent claims at issue combine the teachings of the prior art, special strictness must be applied to be certain that the claims satisfy all of the prerequisites of patentability, and particularly Section 103. *Hewlett-Packard Co. v. Tel-Design, Inc.*, 9 Cir. 1972, 460 F.2d 625. "Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements." *Great A & P Tea Co. v. Supermarket Equip. Corp.*, 1950, 340 U.S. 147, 152, 71 S.Ct. 127, 130, 95 L.Ed. 162, 167. A device is not patentable if it consists of no more than a combination of old elements drawn from existing devices, and which produce results that would be expected from that combination by a person skilled in the relevant art. *Lincoln Engineering Co. of Illinois v.*

Stewart-Warner Corp., 1938, 303 U.S. 545, 549, 58 S.Ct. 662, 664, 82 L.Ed. 1008, 1010. Only where a combination of old elements produces a "synergistic result", that is, results "in an effect greater than the sum of the several effects taken separately", is a device patentable. *Anderson's Black Rock, Inc. v. Pavement Salvage Co.*, 1969, 396 U.S. 57, 61, 90 S.Ct. 305, 308, 24 L.Ed.2d 258, 261.

[14, 15] In considering the disclosures of the prior art references cited by appellant we are guided by the principles that obviousness may properly be based on a combination of references or on the prior art taken as a whole, *Scaramucci v. Dresser Industries, Inc.*, 10 Cir. 1970, 427 F.2d 1309; *Deere & Co. v. Hesston Corp.*, N.D.Tex-1970, 316 F.Supp. 866, aff'd 5 Cir., 440 F.2d 904, cert. denied 404 U.S. 829, 92 S.Ct. 67, 30 L.Ed.2d 58, and that not only the specific teachings of a reference should be considered but also the inferences which one skilled in the art would draw therefrom. *Application of Preda*, C.C.P.A.1968, 401 F.2d 825; *Application of Kamm*, 1972, 452 F.2d 1052, 59 C.C.P.A. 753.

The trial court rejected the combination of the Chattick, Foster, and Mountjoy patents and the National Radio Institute Manual with the Parker '908 patent, on which appellant relied in support of its obviousness defense, stating with regard to each:

"(a) No teaching reference:

(b) The [article or patent] refers to an audio radio receiver having a single carrier, not a vestigial intercarrier television receiver."[14]

The Holmes patent was found by the trial court to disclose a single side band receiver, tuned to the audio

[14] Findings Nos. 28-31.

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carrier, with AM video and AM audio signals. It was found to differ from the '119 patent since it did not teach the combination of a "tuning signal system and a vestigial side band intercarrier television receiver".[15] The district judge further found that the patent claims alleged to be infringed were "unobvious at the time of filing of the patent in suit to a person skilled in the art of intercarrier television receivers".[16]

[16] We find no error in the finding of the district court that none of the prior art references, except, of course, the '908 patent, cited by appellant employed a "vestigial intercarrier television receiver". However, intercarrier television receiver merely describes the receiver of the '908 patent which was prior art at the time the '119 application was filed, and vestigial side band describes the F.C.C. required system of television broadcast transmission. The disclosures of the Parker '908 patent have been discussed at length in connection with the scope of the '119 patent claims; as we have noted, the '908 patent discloses an intercarrier sound receiver, and has the same manual tuning system as the '119 patent. The superheterodyne circuitry of the '908 patent and in the '119 patent receivers provides an IF carrier signal available at the output of the IF amplifier. Although the television receivers in both patents have two carrier signals at the output of the IF amplifier, the tuning indicator circuit in the '119 patent is operated by and responsive to only one carrier signal. The superheterodyne circuit provides the IF signal used to operate the tuning indicator in the '119 patent, while

[15] Findings Nos. 23, 26, 27.

[16] Finding No. 32.

the intercarrier circuit is used in the sound circuit of the receiver. The file wrapper and the '119 patent show that Parker claimed that the addition of a tuning indicator circuit to the intercarrier television receiver of the '908 patent was an improvement to that patent, and that the tuning indicator circuit was the thing which made the '119 claims patentable.[17] Further, Parker argued during the prosecution of the patent that the tuning indicator circuit in the '119 patent was the element which distinguished the '119 claims over the prior art references cited by the Patent Office. See note 8, supra, and accompanying text. In the March 21, 1955, amendment to claim 39, and hence to dependent claim 41, Parker specifically added the language "tuning indicator" to the claim and thereby achieved its allowance. Although the added language was subsequently deleted by the Rule 312 amendment Parker specifically stated in urging the allowance of that amendment that the modification of the claim did not depart from the scope to the invention as previously allowed. Hence, he may not now be permitted to claim that the deletion of "tuning indicator" and "useful in tuning the receiver" materially changed the scope of the invention. See *Rosen v. Kahlenberg*, 5 Cir. 1973, 474 F.2d 858, 867; *Hughes Tool Co. v. Varel Manufacturing Co.*, 5 Cir. 1964, 336 F.2d 61, 65. Similarly, claim 58

[17] The specifications of the '119 patent state:

"While it [the tuning indicator circuit] has special and unexpected advantages when used with the intercarrier circuit it includes features that are applicable to other circuits. Although its use with the vestigial side band system has been described, since it conforms to present preferred practice, and is particularly advantageous for this system, the invention in its broader aspects is not limited to such use."

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was distinguished from the Bradley device on the basis of the claim language calling for a "means for indicating", and in urging the allowance of claim 61 Parker purported to quote a portion of the language of that claim calling for a "tuning indicator". Therefore, the tuning indicator circuitry of the references cited by appellant is the relevant prior art on which the determination of obviousness depends.

At the outset of the discussion of the other prior art, which appellant Motorola maintains discloses the indicator circuitry of the '119 patent, we note that the Holmes, Chittick, Mountjoy, and Foster patents and the National Radio Institute publication all disclosed a superheterodyne receiver with an IF amplifier at the output of which there is a carrier signal. The tuning indicator circuit disclosed in the Chittick and Holmes patents and the National Radio Inst tute manual are coupled to the IF amplifier by coupling circuits, sharply tuned, which are responsive to a single IF carrier signal. The Foster and Mountjoy patents disclose automatic frequency control circuits (AFC) which are also responsive to the carrier signal at the output of the IF amplifier. For purposes of this appeal the prior art references on which Motorola principally relies are the Chittick and Holmes patents.

The Chittick device consists of an AM radio receiver with superheterodyne circuitry, which is manually tuned and utilizes a tuning eye tube as a visual indicator of peak tuning. The tuning indicator circuit is responsive to an audio carrier signal from the output of the IF amplifier, and is connected through a sharply peaked coupling circuit to the IF amplifier. In both the '119 patent and the Chittick device the tuning of the receiver is done manually, and the indicator circuitry itself does no tuning. Its sole purpose is to provide a

visual indication of optimum tuning, without the necessity of listening to the sound or watching the picture as reproduced by the receiver.

The Holmes device discloses a superheterodyne television receiver that is manually tuned to the peak tuned position. The picture is obtainable on the cathode ray picture tube only when the receiver is tuned to peak position. The picture reception is controlled by an indicator circuit employing a "noise suppressor circuit" that is connected to the IF portion of the receiver circuit through a sharply tuned coupling circuit to an IF carrier signal. This "noise suppressor circuit" allows the carrier signal to reach the picture tube only when the receiver is properly tuned. The receiver employed in the Holmes device is a non-intercarrier or "conventional" television receiver. However, the tuning indicator circuit in Holmes can be responsive to the video carrier frequency, and that video carrier signal can be obtained at the output of the IF amplifier in the '908 patent.

In our determination of whether the lower court erred in finding that the '119 patent satisfied the requirement of non-obviousness, we note from these prior art references that it is clear that the carrier signal produced at the output of the IF amplifier in the '119 and '908 patents is the type of signal which was used in these prior art references to operate a tuning indicator. Further, the tuning eye tube in the '119 patent, co-invented by Parker in 1935, performed precisely the same functions as the tuning indicators in the Chittick and Holmes patents. The fact that the Chittick device employs a radio receiver is of no significance in light of the fact that the indicator circuitry of the '119 patent responds equally to either a video or audio carrier signal, regardless of which it is connected to.

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The National Radio Institute Study Manual relied upon by Motorola demonstrates that the use of a carrier signal from the output of an IF amplifier coupled to a tuning indicator circuit by sharply tuned coupling circuits, as disclosed in the Chittick and Holmes devices, would have been obvious to one skilled in the art in 1950, when the '119 patent application was filed. See *Zero Manufacturing Company v. Mississippi Milk Producers Association*, 5 Cir. 1966, 358 F.2d 853, 858, cert. denied 385 U.S. 841, 87 S.Ct. 93, 17 L.Ed.2d 74. To combine this circuitry with a tuning eye tube of the type invented by Parker in 1935, as was done in the Chittick device, and the intercarrier television receiver of the '908 patent would also have been obvious to one skilled in the art in light of the fact that this type of circuitry had been used in providing tuning indicators to the prior art receivers cited by Motorola, having a carrier signal or signals at the output of the IF amplifier precisely as does the '119 patent receiver.

[17] From our examination of the claims of the '119 patent, and the prior art references cited by appellant, we find that the combination of old elements and principles employed in the patent does not perform a function different from that theretofore performed, nor does the combination produce "unusual or surprising consequences", *Great Atlatnic & Pacific Tea Co. v. Supermarket Equipment Corp.*, 1950, 340 U.S. 147, 152, 71 S.Ct. 127, 130, 95 L.Ed. 162, 166-67, or a "synergistic result". *Anderson's Black Rock, supra.* In holding that the claims are void for obviousness, we necessarily disagree with the conclusion of the district court. To the extent that the district court's conclusion was based on factual findings we have exercised our authority to review the record for ourselves. Thereupon we determine that the non-obviousness findings below are clearly erroneous.

MISREPRESENTATIONS TO THE PATENT OFFICE

Motorola contends that the '119 patent claims in issue are invalid not only as obvious, but also because of misrepresentations by Parker to the Patent Office in the prosecution of the patent application. To support this contention appellant relies on the file wrapper of the '119 patent. First, our attention is directed to the representation by Parker in the amendment of March 21, 1955, that claim 61 contained the language "tuning indicator" and "useful in tuning the receiver", although as noted previously no such language appeared in that claim. Secondly, appellant cites the addition of the same phrases to claim 39 by the March 21 amendment, and their subsequent deletion by the Rule 312 amendment. Parker in response contends (i) that the inaccurate quotation of claim 61 was the result of a clerical error on the part of the attorney representing him in the prosecution of the application; and (ii) that the Rule 312 amendment was approved by both the Examiner and the Supervisory Examiner, and did not broaden the scope of the invention. The district court found "no evidence [of] willful, intentional or actual fraud, concealment or misrepresentation" to the Patent Office by Parker.[18]

[18-20] Our start is with the rubric that because the grant of a patent is affected with a public interest, an applicant owes "an uncompromising duty to report to [the Patent Office] all facts concerning possible fraud or inequitableness underlying the applications in issue." *Precision Instrument Mfg. Co. v. Automotive Maintenance Mach. Co.*, 1945, 324 U.S. 806, 818, 65 S.Ct.

[18] Finding No. 35.

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993, 999, 89 L.Ed. 1381, 1388; *Kingsland v. Dorsey*, 1949, 338 U.S. 318, 319, 70 S.Ct. 123, 124, 94 L.Ed. 123, 126. The concept that a patent is invalid because of misconduct by the patentee in proceedings before the Patent Office goes beyond the classical definition of fraud, and encompasses a wide variety of inequitable conduct. *Carter-Wallace, Inc. v. Davis-Edwards Pharmacal Corp.*, 2 Cir. 1971, 443 F.2d 867, 881; *Norton v. Curtiss*, 1960, 433 F.2d 779, 793, 57 C.C.P.A. 1384. Although the type of misconduct before the Patent Office which results in the invalidity of a patent admits to no fixed parameters, it is necessary that there by some element of wrongfulness, willfulness, or bad faith. See *Monsanto Co. v. Rohm & Haas Co.*, 3 Cir. 1972, 456 F.2d 592, 597, cert. denied 407 U.S. 934, 92 S.Ct. 2463, 32 L.Ed.2d 817; *A. H. Emergy Co. v. Marcan Products Corp.*, 2 Cir. 1968, 389 F.2d 11, cert. denied 393 U.S. 835, 89 S.Ct. 109, 21 L.Ed.2d 106; *Xerox Corp. v. Dennison Mfg. Co.*, D.C.N.Y. 1971, 322 F.Supp. 963, 969. Hence, mere negligent omissions or misstatements to the Patent Office do not provide sufficient basis for a finding of fraud or misrepresentation by an applicant for a patent. *Xerox Corp., supra.*

In *Beckman Instruments, Inc. v. Chemtronics, Inc.*, 5 Cir. 1970, 439 F.2d 1369, cert. denied 400 U.S. 956, 91 S.Ct. 353, 27 L.Ed.2d 264, this Court held the patent in suit invalid (1) as anticipated by the prior art, and (ii) because of intentional nondisclosure to the Patent Office by the patentee in securing the patent. *Id.* at 1374-80. We found in *Beckman*, that the patentee deliberately withheld from the Patent Office knowledge of prior art, which would, if known by the Examiner, have resulted in the deninal of the patent, and, therefore, the patent was invalid. *Id.* at 1374, 1378, 1379. Similarly, in both *Armour & Co. v. Swift & Co.*,

7 Cir. 1972, 466 F.2d 767, and in *Monsanto Co. v. Rohm & Haas Co.*, supra, relied on by Motorola, there was evidence that the respective patentees made knowingly false statements and concealed material facts which would have resulted in the denial of the patent by the Patent Office.

[21] The testimony of attorney Hall, unrebutted by Motorola, concerning the circumstances surrounding the inaccurate quotation of claim 61, places the blame for this error on the negligence of Hall and his office staff. With regard to claim 39 and the Rule 312 amendment of that claim, we have found above that Parker did not recapture the former scope of that claim by the amendment. Nor did he represent to the Patent Office or in this court that the amendment was intended to recapture the scope of the claim prior to the March 21 amendment, and the addition of the tuning indicator language. From a review of the evidence presented below we are not persuaded that the trial court was "clearly erroneous" in finding that Parker did not make material misrepresentations to the Patent Office in the prosecution of the '119 patent application. Rule 52(a), F.R.Civ.P.

ATTORNEY'S FEES

[22] Pursuant to Title 35, U.S.C., Section 285, a court may award attorney fees to the prevailing party in patent litigation, in exceptional cases. This record contains no indication that Parker did not proceed in this litigation in good faith, under a bona fide belief that the patent claims were valid. It follows that we do not view this as an exceptional case justifying the award of attorney fees to Motorola.

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CONCLUSION

We reverse the judgment appealed from as to its holding that patent '119 was a valid patent, on the ground of obviousness in light of the prior art. The district court's findings of infringement of the '119 patent by Motorola Chassis TS-915 falls with our reversal as to its holding of validity of the patent.

Discussion of Parker's cross-appeal as to the trial court's finding of non-infringement by Motorola Chassis TS-934 is also rendered unnecessary. We affirm as to the cross-appeal.

The district court's findings of lack of proof of fraudulent misrepresentation and concealment in the prosecution of the '119 patent are affirmed.

We decline to award attorney fees to Motorola, holding that this is not the "exceptional case" calling for such an award.

Costs are directed to be taxed against the appellee, Louis W. Parker.

Reversed in part; affirmed in part.

APPENDIX

CLAIM 3

(1) A television receiver of the vestigial side band type for receiving a video modulated carrier having a portion of one video side band removed and having a frequency modulated audio channel operating just beyond the other video side band, comprising in combination,

(2) means tunable over a range of frequencies inclusive of those of the signals to be received for producing a radio frequency signal having a band of modulations thereon conforming substantially to those on said received waves, said means including

(3) an element for passing said radio frequency signals, said element having at its upper end an acceptance curve which includes a small portion of said first side band and which is rising as it crosses from the last-named to the remaining side band, said acceptance curve including at its other end the frequency modulated audio signal modulations,

(4) a detector for detecting the output of said element,

(5) means amplifying the detected output and utilizing it for producing a picture,

(6) a selector for extracting the frequency modulated audio signals from the detected energy,

(7) selective means peaked to a frequency on the said rising portion of said curve,

(8) the selective means being sharply peaked as compared to the width of the video modulations and being connected to the first-named means and energized by said radio frequency signal, and

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(9) means energized by said selective means for producing a signal indicative of the tuning adjustment of said receiver and useful to effect accurate tuning thereof to a received signal.

CLAIM 5

(1) A television receiver as defined by Claim 3, in which said tunable means is a radio receiver of the superheterodyne type,
(2) said element being a part of an intermediate frequency amplifier stage,
(3) said selective means being connected to an intermediate frequency amplifier and being responsive to the modulated intermediate frequency signal.

CLAIM 14

(1) In a television receiver for a television system in which a picture signal carrier is amplitude modulated and the complemental sound signal is transmitted as a frequency modulation of a second carrier, in combination,
(2) an amplifier,
(3) means for supplying said picture and sound carriers of a television signal to said amplifier,
(4) a detector supplied by said amplifier, and
(5) a selecting circuit connected between said amplifier and said detector and having a frequency characteristic such that both picture and sound carriers are passed to said detector,
(6) the two carriers being heterodyned with each other in the detector,

(7) means in the selecting circuit for modifying the characteristics of that circuit so that it is characterized by substantially zero slope over the range of frequency swing of the sound carrier and has an amplitude level below the minimum modulated amplitude of the amplitude-modulated picture signal carrier,

(8) whereby the output from said detector contains both detected video signals and undetected frequency modulated audio signals, and

(9) a detector responsive to the undetected signals to produce the audio signals,

(10) resonant means connected to said amplifier and peaked sharply to the picture signal carrier frequency in the output of said amplifier, and

(11) means for indicating the amplitude of the current flow in said resonant means.

CLAIM 17

(1) A radio receiver for receiving a wave which has a carrier having a wide band of modulations on it together with an additional audio modulated signal the frequency of which varies within limits outside of said wide band, comprising in combination,

(2) tunable input means for producing in its output a radio frequency signal having both of said modulations on it,

(3) a detector for rectifying the output of said input means,

(4) a selector for passing said additional modulations,

(5) audio means responsive to the output of said selector,

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(6) selective means sharply peaked as compared with the width of said wide band and connected to said input means,

(7) said input means having an acceptance band broad enough to include both of said modulations and

(8) the selective means being peaked to a frequency corresponding to the carrier frequency of said radio frequency signal when the tuning means is tuned to optimum position, and

(9) means controlled by said selective means for effecting an indication when the selective means is being fed with signals whose frequency corresponds to the resonant frequency of the selective means.

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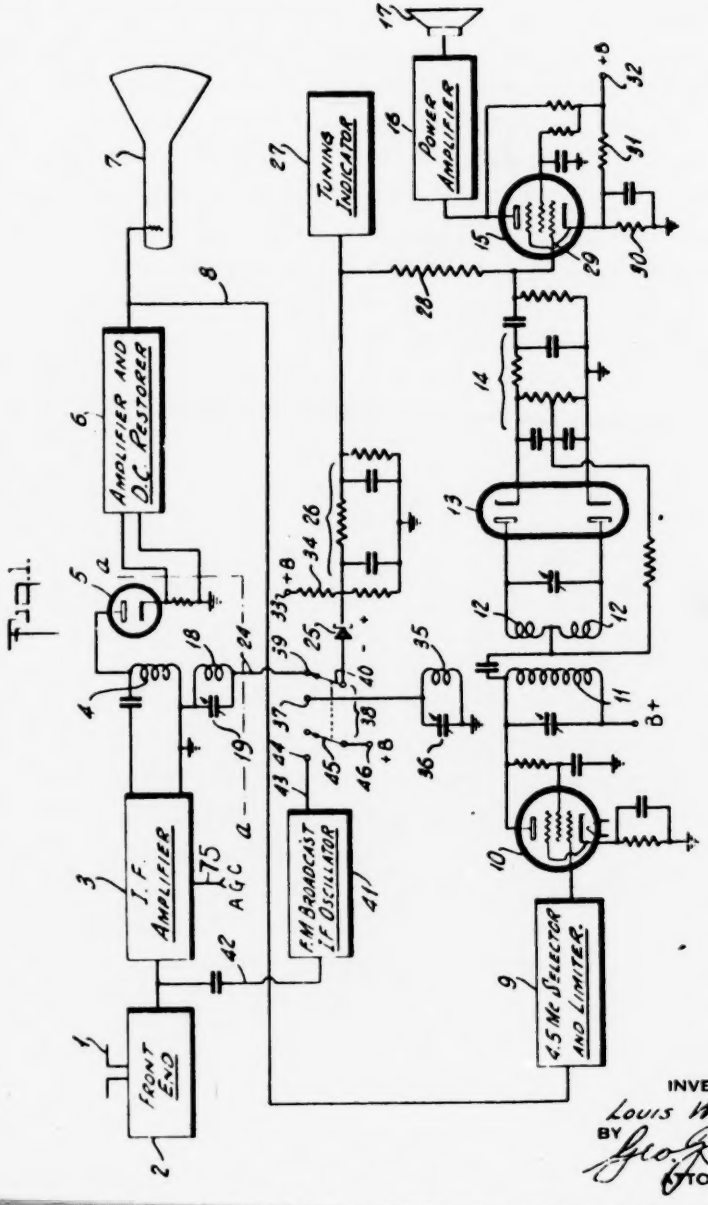
Dec. 4, 1956 L. W. PARKER 2,773,119

TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS

Filed April 4, 1950 3 Sheets-Sheet 1



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PARKER v. MOTOROLA, INC.

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TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS

Filed April 4, 1950 3 Sheets-Sheet 2

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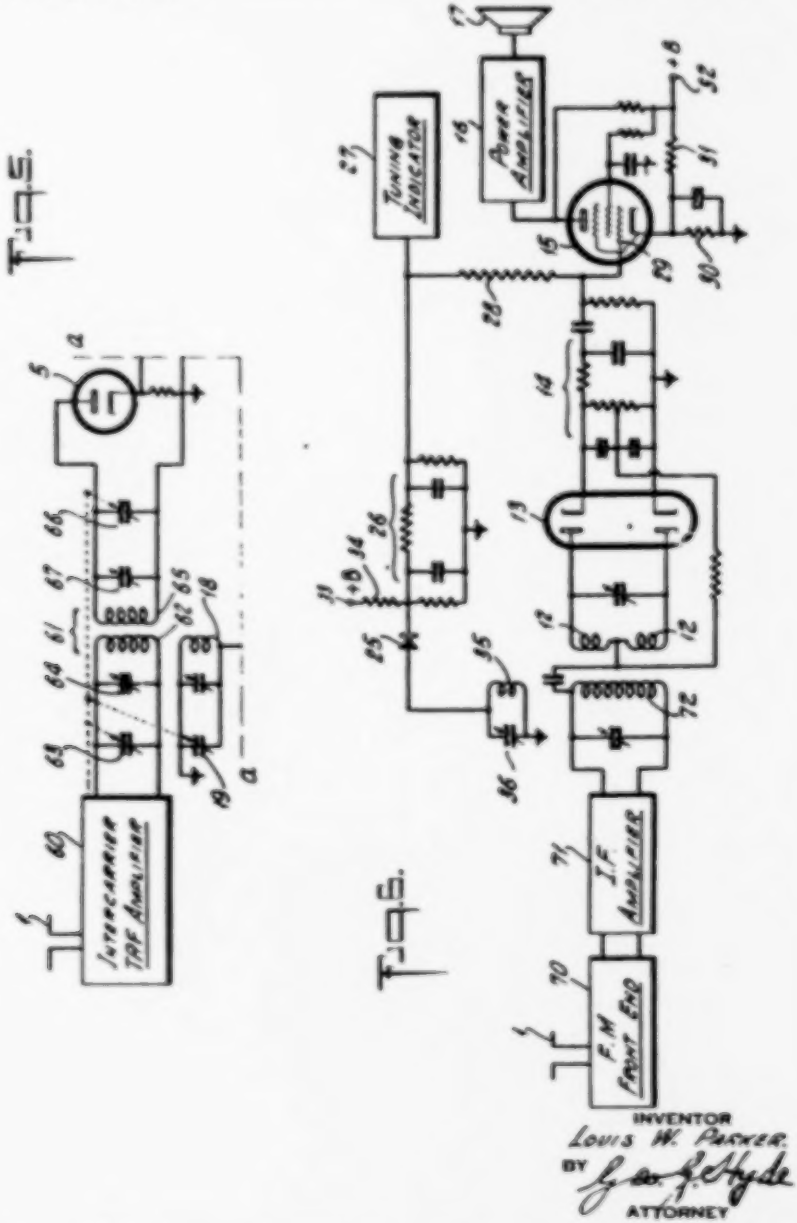
PARKER v. MOTOROLA, INC.

Dec. 4, 1956 L. W. PARKER 2,773,119

TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS

Filed April 4, 1950 3 Sheets-Sheet 3



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United States Patent Office 2,773,119
Patented Dec. 4, 1956

2,773,119

TUNING SYSTEM FOR RADIO AND TELEVISION RECEIVERS

Louis W. Parker, Little Neck, N. Y.

Application April 4, 1950, Serial No. 161,279

19 Claims. (Cl. 178—5.8)

This invention relates to a tuning system for radio and television receivers, and particularly for such receivers which have a tuned circuit with a relatively wide pass band. This condition is found in receivers for frequency modulated carrier waves, and in television receivers, especially where the vestigial side band system of transmission is used.

The invention is particularly advantageous for television receivers which employ the intercarrier circuit. This circuit, which is disclosed in the present inventor's Patent No. 2,448,908, preferably employs a superheterodyne circuit having a single I. F. amplifier for both the AM video carrier and the FM audio carrier, the output of the second detector including a beat frequency produced by the carriers that is frequency modulated by the audio signals. This beat frequency passes through a selector and limiter to the usual discriminator, amplifier and loud speaker circuits for the audio signals.

The acceptance of the I. F. amplifier in this circuit is made sufficiently broad, in order to pass the video and audio bands, so that when the receiver is tuned to a station the tuning may be varied considerably without changing the volume from the loud speaker; and accurate tuning therefore depends on observation of the picture quality. This arrangement is subject to certain drawbacks. It is difficult to detect poor picture quality when

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certain types of pictures are received; too much dependence is placed on the operator's judgment and care, which are subject to wide individual variations; and picture quality is not sharply peaked, but varies gradually in the neighborhood of correct tuning, requiring care and close attention to get the best results.

The same problem is present in intercarrier television receivers which employ a common tuned radio frequency circuit for amplification of both the video and the audio carriers, since the acceptance of the TRF circuit must be broad enough to pass both carriers. It is also present in receivers for frequency modulated carriers, since the amplification circuit must have sufficiently broad acceptance to pass all frequencies within the modulation range of a carrier without distortion.

A general object of the invention is to provide a novel tuning system for television receivers that is not dependent on observation of picture changes, and which has a sharply peaked response to tuning. One purpose is to provide such a tuning system that is adapted to operate in substantially the same manner as standard radio tuning systems, so that prospective television receiver purchasers will not be deterred by strange tuning devices. The invention facilitates the practical and effective use of continuous tuning arrangements having control knobs similar in appearance and operation to those on radio receivers.

Another purpose is to provide an improved tuning system for television receivers employing the intercarrier system which will operate with greater speed, accuracy and convenience.

More specific objects are to furnish a visual indication of correct picture tuning, such as a tube of the "tuning eye" type; an audible indication by producing a sharp peak of sound volume when tuning is correct; and a combination of these two types of indicators.

Another purpose of the invention is to provide a tuning indicator circuit that can be used when FM broadcasts of sound alone are being received. This is applicable both to receivers of FM broadcasts alone, and to television receivers that have a special circuit for FM broadcast

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reception. In the latter instance a specific feature is the provision of a tuning circuit arrangement that uses the same main circuit elements for both television and sound broadcast reception.

A further important object is to furnish a tuning indicator system that is relatively simple and inexpensive, and which can be incorporated in existing television circuits without extensive changes.

These and other objects and advantages will appear from the following description of a preferred embodiment of the invention, in conjunction with the accompanying drawings, in which:

Fig. 1 is a diagram of a television receiver circuit employing the intercarrier system, with superheterodyne amplification, and embodying the invention, including an inductively coupled indicator circuit;

Fig. 2 is a similar diagram, showing buffer amplifier coupling of the indicator circuit;

Fig. 3 is a graph of the acceptance curves of the receiver I. F. circuit and of the indicator circuit;

Fig. 4 is a diagram of a modification of the indicator circuit;

Fig. 5 is a diagram of a modification of the initial portion of the circuit shown in Fig. 1 up to the line *a*—*a*, illustrating the application of the invention to such a circuit employing tuned radio frequency amplification; and

Fig. 6 is a diagram of an FM broadcast receiver circuit embodying the invention.

The invention is illustrated in Figs. 1 and 2 by its use in a television receiver of the superherterodyne type employing the intercarrier circuit. Since this circuit is well known and has been extensively described in publications, only the portions pertinent to this invention are shown in detail.

In the form illustrated in Fig. 1 the incoming signals picked up by antenna 1 pass through the conventional front end 2 of a television receiver, having the usual tuning controls, to the I. F. amplifier 3, which transmits them through a coupling system including coil 4 to video detector 5, from which they pass through video amplifier and D. C. restorer 6 to picture tube 7. The FM

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audio signals, carried by the beat frequency, are taken off by lead 8 and pass through selector and limiter circuit 9 terminating in pentode 10, discriminator input coil 11, output coils 12, rectifier 13, filter 14, amplifier tube 15 and power amplifier 16 to loud speaker 17, in accordance with well known practice.

At the input end of the indicator circuit is a coil 18 coupled to an inductance in the I. F. amplifier, such as output coil 4, and tuned by condenser 19 to a frequency that will produce the maximum pickup by the indicator circuit when the front end 2 is correctly tuned to an incoming picture carrier.

The invention is illustrated in its application to the vestigial side band receiver described in the abovementioned patent. In a receiver of this type, as indicated in Fig. 3, the video carrier intermediate frequency is located at about the midpoint of the slope 20 at the high frequency end of the acceptance curve 21 of the I. F. amplifier at its output end, the amplifier being designed to provide maximum amplification for the lower side band. At its other end curve 21 drops sharply to the audio carrier frequency 22, described in said patent. Under the system now in force in the United States the audio and video carrier frequencies are spaced by 4.5 mc.; and in the illustrated I. F. amplifier the audio intermediate frequency is 21.25 mc. and the video intermediate frequency is 25.75 mc.

The circuit 18—19 is tuned to substantially the correct video I. F. carrier frequency, and its acceptance curve is sharply peaked, especially since coils 4 and 18 are advantageously coupled so that a minimum of energy is extracted from the main circuit by the indicator circuit. This coupling must be loose enough so that it does not appreciably affect the selectivity curve. It has been found that for greatest tuning precision with the illustrated side band system, the indicator input circuit 18—19 should be tuned to a frequency very slightly below the correct video intermediate frequency, the difference being only of the order of 0.1 mc. under standard conditions. This precise tuning setting can best be obtained empirically, as by tuning variable condenser 19, adjusting it for maximum input into the indicator circuit when the correct video

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carrier frequency is passed through the I. F. amplifier. However, this is a tuning refinement that is not absolutely necessary to satisfactory operation, and is intended to be included in the description of input circuit **18—19** as substantially tuned to the video intermediate carrier frequency.

Coil **18** is connected by lead **24** to the negative side of rectifier **25**, which may be a crystal or other suitable type. The rectifier output passes through a filtering and attenuating network **26** to tuning indicator **27**. This may be a tube of the well-known "tuning eye" type, such as tube type 1629, in a suitable circuit. This type of tube has a visible target with a luminous arc varied in extent by changes in tuning, and for convenience will be referred to herein as a tuning eye tube. It should be noted, however, that in the present instance, since positive control potential is supplied to the tube, it will operate in reverse, with the maximum gap between the ends of the luminous arc when tuning is correct. The rectified output will not vary with changes in picture content since the rectifier operates only on synchronizing signal peaks, as would a peak voltmeter. The manner in which this is accomplished will be described later.

The output of network **26** is also applied through resistor **28** to the control grid **29** of audio amplifier tube **15**. This grid is biased, relative to the cathode, to a negative bias substantially more negative than the correct value for optimum amplification, resulting in a low level of sound output and weak signals from loud speaker **17**. This bias may be produced in various ways. In the form illustrated, in addition to the use of biasing resistor **30** in the cathode circuit, an appropriate positive potential is applied to the cathode, as by connecting the cathode through resistor **31** to a positive potential source, which advantageously is the usual plate potential source **32**.

The bias potential of grid **29** is selected so that, when the maximum current flows in the indicator circuit, the resulting positive potential applied by the latter circuit to grid **29** will raise the grid potential to the correct value for optimum audio amplification. Although in the illustrated embodiment the fixed grid bias, and the variable grid bias from the indicator circuit, are shown as applied

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to the same grid of the tube **15**, which has only one operative control grid, the invention in its broader aspects is not limited to this arrangement or to the type of tube shown, since similar results can be obtained by utilizing multiple control grids of a suitable tube, such as type 6L7.

The indicator circuit includes an arrangement which maintains the sound volume at a steady level during tuning. In the form shown, this arrangement applies to the output of rectifier **25** a D. C. potential whose value is higher than that produced by undesirable sound signals, such as side band frequencies and noises, but of course substantially lower than the channel tuning peaks **23**. This procedure is sometimes described as introducing a delay factor or delay bias; but it should be understood that the term does not refer to a time delay in such cases. In the illustrated circuit the result is obtained by connecting the output of rectifier **25** to a source of positive potential **33**, which may be the plate potential source connected through a suitable dropping resistor **34**.

The operation of the system as thus far described is as follows: When the receiver is being tuned to the frequency of a desired channel the indicator circuit is not affected until the front end **2** is tuned sufficiently close to the correct setting so that the incoming signals are carried by an intermediate frequency within the pass band of amplifier **3**, a picture of some type appears on the screen of tube **7**, and sound is heard from speaker **17**. Tuning indicator **27** may indicate reception of such signals; but owing to the peaked characteristic **23** of the indicator circuit, the D. C. voltage applied to indicator **27** and grid **29** will be so low that neither the visual indication nor the sound volume will be materially affected until the tuning approaches closely to the correct value. Upon such approach the sound volume will rise sharply, the width of the dark gap in the tuning eye tube will change noticeably, and when tuning is precisely correct, slight changes in either direction will cause a noticeable drop in sound volume and a substantial change in the appearance of the indicator **27**. The operator will therefore tune to a well-defined peak of sound, to a definite indicator position, or to both, without the necessity of judging picture quality.

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This type of operation can be obtained with tuning controls of any desired type devoted solely to tuning the front end to the correct wave length, and eliminates the need for special types of tuning heretofore used in television receivers. It is pointed out that with this system the tuning affects the volume of sound, not its quality, which is harder to judge.

It should also be noted that, while the sides of curve 23 are steep, it will be sufficiently broad at the top to permit the oscillator-generated frequency in the front end 2 to drift considerably without producing any noticeable change in the sound or the picture. Such a drift generally occurs as the set warms up; and the width of the top of curve 23 between the steep sides is sufficient to eliminate the need for retuning after initially tuning to the right setting.

While both a visual indicator 27 and a sound volume varying arrangement are shown, and can be used in combination as in many radio receivers, it will be evident that either type of tuning indication may be used alone, either by omitting the indicator 27 or by eliminating the connections through resistors 28 and 31 to tube 15.

Television receivers are frequently arranged to receive FM sound broadcasts without pictures; and when the intercarrier circuit is used it is necessary to employ an additional oscillation generating circuit to provide a carrier which replaces the video carrier and produces the beat carrier for the sound. Since the carrier for the generating circuit does not vary in frequency during tuning, the previously described indicator circuit is ineffective for reception of sound broadcasting.

As already noted, a feature of the invention is the provision of a circuit that overcomes this difficulty; and a specific feature is the utilization of the major part of the television indicator circuit heretofore described, for FM sound broadcast tuning indication. This is accomplished in general by providing a second pickup circuit coupled to the audio circuit of the television receiver, where the frequency is of course varied by the tuning, and substituting the second pickup circuit for the pickup circuit described above, when the receiver is switched to FM sound broadcast reception.

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This is illustrated in Fig. 1, in which a second pickup coil 35 is inductively coupled to a coil in the audio circuit, such as discriminator input coil 11, and is tuned to the audio carrier frequency by shunt condenser 36. A switching arrangement is provided for substituting coil 35 for coil 18 in the input circuit to rectifier 25 when the oscillation generating circuit for FM sound broadcast reception is switched on. In the embodiment shown, coil 35 is connected to point 37 of double pole double throw switch 38, whose point 39 is connected through lead 24 to pickup coil 18; and switch arm 40, which contacts said points alternatively, is connected to the input of rectifier 25. An oscillator 41, which generates the video carrier intermediate frequency wave (25.75 mc. in the example given), has an output lead 42 connected to the input of the I. F. amplifier 3, and a plate potential lead 43 connected to point 44 of switch 38, engaged by switch arm 45, connected to source 46 of plate potential, when the switch 38 is in left hand or sound broadcast receiving position, with arm 40 contacting point 37.

With this arrangement oscillator 41 is inactive when switch 38 is in right hand or television receiving position, and is energzed when the switch is thrown to the left, simultaneously with the substitution of the coil 35 for coil 18 in the indicator circuit input. This arrangement therefore utilizes the main portion of the indicator circuit for both types of reception.

It may be desirable in some cases to avoid the effects of inductive coupling of the indicator circuit to the main circuit, as shown in Fig. 1; and a similar circuit, using conductve coupling and a buffer tube, is illustrated in Fig. 2. The circuit is largely the same as the one previously described, and corresponding parts are indicated by the same numerals. In this embodiment switch point 39 is connected by lead 50 to the output of amplifier 3 through coil 4. Switch arm 40 is connected to the control grid of buffer tube 51, whose output is fed through a tuned output transformer to the indicator circuit rectifier. In the form illustrated the transformer comprises two tuned sections 52*a* and 52*b* in series, tuned respectively to the video carrier intermediate frequency in amplifier 3, and to the audito carrier frequency at the output of tube 10.

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With this arrangement either of these frequencies will be passed with low impedance, while other frequencies will be effectively blocked. It should be understood that, although the illustrated embodiment employs a simple, practical tuned transformer arrangement in Fig. 2 which eliminates the need for switching at this point, the showing is not intended to be restrictive or limiting.

It will be noted that the rectifier in Fig. 2 is shown as a diode; but this is done simply to illustrate the fact that different rectifiers can be used in both Fig. 1 and Fig. 2, whose requirements are the same. Likewise, while switch point **37** is shown as connected through lead **54** to the input coil **11** of the discriminator, it will be apparent that this likewise is illustrative and not restrictive.

The operation of the Fig. 2 circuit is substantially the same as that previously given for Fig. 1. Since leads **50** and **54** draw no current, this arrangement does not affect the operation of the main television circuit.

It has been pointed out that with the circuits heretofore described, when a tuning indicator employing a tuning eye tube is used, it will operate in reverse fashion, since the control potential from the indicator circuit is positive. While this arrangement will operate satisfactorily, there is some advantage in having the tube operate in conventional fashion. This may be accomplished by modifying the control circuit to provide a negative control potential; and one arrangement of this type is illustrated in Fig. 4. It includes separate circuits for the visual indicator **27** and for the sound indicating arrangement including tube **15**, both connected to the same pickup through switch arm **40**. The sound circuit is the same as that previously described, including rectifier **55**, filter **26** and resistor **28**, connected as in Figs. 1 and 2. A separate visual indicator circuit is also connected to switch arm **40**, and includes a second rectifier **56**, connected with its positive side toward arm **40** and the input, so that the negative side is connected through filter **57**, which may be the same as filter **26**, to the visual tuning indicator **27**, where it controls the operation of the tuning eye tube in conventional manner.

The same D. C. potential may also be used for automatic gain control of the I. F. amplifier. Lead **75** con-

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nected to the output of filter 57 conducts the negative control potential to the I. F. amplifier grids in the conventional manner. The control voltage does not vary appreciably with changes in picture content because the diode operates on synchronizing pulses, as would a peak voltmeter.

As already indicated, the invention is advantageous for television receivers employing a tuned radio frequency intercarrier amplification section. This embodiment is illustrated in Fig. 5. Parts common to Figs. 1 and 5 are designated by the same numerals, and as the portions of the circuits of these figures following line *a*—*a* are the same, this portion is not included in Fig. 5.

The circuit of the amplifier 60 is well known, being shown in standard publications and therefore is not illustrated in detail. The last amplifier stage includes the usual output transformer 61, with primary 62 shunted by tuning condenser 63 and trimming condenser 64, and secondary 65 connected to the detector tube 5 and shunted by tuning condenser 66 and trimming condenser 67. All of these condensers are of course variable; and the tuning condensers 63, 66 are ganged with other tuning condensers in amplifier 60 in accordance with standard practice.

The indicator circuit input coil 18 is inductively coupled to primary coil 62, and the variable condenser 19 which tunes coil 18 is ganged with condensers 63 and 66. Coil 18 and condenser 19 are designed and arranged to maintain a substantially uniform difference of 2 megacycles between the frequencies to which coils 62 and 65 are tuned, throughout the tuning range. This is due to the vestigial system of transmission of television signals, which places the picture carrier about 2 mc. away from the middle of the band. It has been found in practice that the frequencies to which these coils are tuned do not vary during tuning at precisely the same rate, so that the frequency difference will vary slightly at different points in the tuning range. It has been found that by adjusting the inductance of coil 18 and the capacity of its trimmer condenser the desired difference can be obtained at the upper and lower limits of said range, and the variations at intermediate frequencies will be negligible.

The operation of this embodiment is apparent from from the foregoing description.

While the invention has particular value when applied to television receivers, especially those using the intercarrier system, it is also applicable to other circuits which present a similar problem of obtaining precise tuning when the tuned circuits have a relatively broad pass band. This condition is present in receivers of frequency modulated valves, in which the pass band must be wide enough to pass the entire range of modulation frequencies without distortion. Such receivers require care and accurate aural judgment in order to tune them correctly to a setting at which neither the highest nor the lowest modulation frequencies are distorted. The present invention substitutes simple judgment of sound volume, of the visual indicator position, or of both, for judgment of slight changes in sound quality.

A circuit of this type is shown diagrammatically in Fig. 6, which illustrates an FM receiver having the usual front end 70 and I. F. amplifier 71, since superheterodyne amplification is generally used in such receivers. Amplifier 71 terminates in the primary 72 of a discriminator, which is inductively coupled to the indicator circuit input coil 35, tuned by condenser 36 and connected to rectifier 25. Since the latter parts and the remaining elements of the circuit have the same arrangement and functions as similar parts and elements in the indicator system operated by the audio circuit as shown in Fig. 1 and described above, they are designated by the same numerals, and further description of the operation of this embodiment is not necessary. Coil 35 is tuned to the intermediate frequency in amplifier 71; and when the front end 70 is accurately tuned to the desired carrier wave length, so that the entire range of modulation frequencies is passed without distortion, that fact will be clearly indicated by sound volume and by indicator position, as already noted.

For simplicity, only the inductive type of input coupling of the indicator circuit has been shown in Figs. 5 and 6; but this showing is not intended to be construed as a limitation to this type of coupling, especially since the

conductive type has been illustrated in Fig. 2. It is also evident that the modification shown in Fig. 4 is applicable to Figs. 5 and 6.

While a specific embodiment of the invention and certain variations have been described, it will be evident that the invention is not limited to the particular arrangements shown. It can be applied by electronic engineers in the light of this disclosure to a wide variety of circuits, and particularly television circuits, that have been and will be hereafter disclosed. While it has special and unexpected advantages when used with the intercarrier circuit, it includes features that are applicable to other circuits. Although its use with the vestigial side band system has been described, since it conforms to present preferred practice, and is particularly advantageous for this system, the invention in its broader aspects is not limited to such use. Likewise, the invention is not limited to circuits employing a discriminator.

The specific disclosure therefore is not intended to limit the invention to the particular embodiments described, except as indicated in the claims.

I claim:

1. A television receiver of the vestigial side band type for receiving a video modulated carrier having a portion of one video side band removed and having a frequency modulated audio channel operating just beyond the limit of the other video side band, comprising in combination, tunable means for receiving the modulated radio waves and producing a radio frequency signal having a band of modulations thereon conforming substantially to those on the received waves, a detector for rectifying the output of said means, means responsive to the video signals existing in the output of said detector for displaying a picture, a selector connected to the output of said detector for selecting the frequency modulated audio signals, a frequency discriminator fed by the output of said selector, an audio amplifier fed by said frequency discriminator, selective means connected to said first-named means and sharply peaked as compared to the band width of the video modulated signals, said selective means being peaked at a frequency within the band of the video signals near the end thereof opposite that which carries the audio modulation.

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and tuning indicator means responsive to the output of said selective means for increasing the gain of said audio amplifier to increase the output thereof when said selective means is fed with signals at its resonant frequency.

2. A television receiver as defined in claim 1, in which said tunable means and said selective means are inductively coupled to each other.

3. A television receiver of the vestigial side band type for receiving a video modulated carrier having a portion of one video side band removed and having a frequency modulated audio channel operating just beyond the other video side band, comprising in combination, means tunable over a range of frequencies inclusive of those of the signals to be received for producing a radio frequency signal having a band of modulations thereon conforming substantially to those on said received waves, said means including an element for passing said radio frequency signals, said element having at its upper end an acceptance curve which includes a small portion of said first side band and which is rising as it crosses from the last-named to the remaining side band, said acceptance curve including at its other end the frequency modulated audio signal modulations, a detector for detecting the output of said element, means amplifying the detected output and utilizing it for producing a picture, a selector for extracting the frequency modulated audio signals from the detected energy, selective means peaked to a frequency on the said rising portion of said curve, the selective means being sharply peaked as compared to the width of the video modulations and being connected to the first-named means and energized by said radio frequency signal, and means energized by said selective means for producing a signal indicative of the tuning adjustment of said receiver and useful to effect accurate tuning thereof to a received signal.

4. A television receiver as defined in claim 3 in which said tunable means is a tuned radio frequency amplifier producing said radio frequency signal in its output, said tunable means having a variable tuning member, said selective means comprising a tuned resonant circuit having a variable tuning member ganged with the first-named tuning member in such relation that the frequency of the

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selective means remains on the said rising portion of the acceptance curve of the tunable means.

5. A television receiver as defined by claim 3, in which said tunable means is a radio receiver of the superheterodyne type, said element being a part of an intermediate frequency amplifier stage, said selective means being connected to an intermediate frequency amplifier and being responsive to the modulated intermediate frequency signal.

6. A television receiver as defined by claim 5 in which said means controlled energized by said selective means comprises all of the following parts: an audio amplifier coupled to the output of said selector and including a control grid for controlling the gain, a tuning eye, a first series circuit including a rectifier and filter for connecting the output of said selective means to said grid, and a second series circuit including a rectifier and filter for connecting the output of said selective means to said tuning eye.

7. In a television receiver, signal producing means comprising an input circuit for passing a band of frequencies wide enough to include both the video and sound modulations, said circuit including tuning means for varying the frequency of reception, and a detector coupled to the output of said circuit; means coupled to the output of said detector for producing a picture conforming to the video modulation detected; means for separating the audio modulations in the output of said detector and for amplifying the same; an electron discharge device having a grid; means connecting said grid to said input circuit; a tuned circuit in the output circuit of said discharge device; said tuned circuit being tuned to a frequency within said band and being sharply peaked as compared to the width of said band, and tuning indicating means responsive to the potential across said tuned circuit for effecting an indication useful in tuning the receiver which varies with said potential.

8. A television receiver as defined in claim 7 in which the tuning indicating means includes means for increasing the degree of amplification of the audio modulations as the signals reaching said tuned circuit approach its resonant frequency.

9. In a television receiver of the tuned radio frequency type, an input circuit for producing in its output a band

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of frequencies with the carrier frequency closely adjacent one end of the band and including tuning means for varying the frequency of reception, the tuning means having a mechanically variable element operable to control the frequency of reception; audio means for extracting from said band of frequencies any audio modulation existing in said band adjacent the other end thereof, means for extracting from said band of frequencies any video modulations, selective means peaked in said band for developing a signal depending on the amplitude of the signals in said band, said selective means including a tuned resonant circuit having a mechanically variable element for adjusting the frequency thereof, and means ganging said mechanically variable elements together in such relation that the tuned resonant circuit is tuned to said carrier frequency in said band when the tuning means is adjusted to allow the whole band to readily pass, tuning indicator means, and control means responsive to said selective means for controlling the degree of indication given by said tuning indicator means in response to variations in the output of said selective means.

10. A television receiver as defined in claim 9 in which said indicating means is a loudspeaker, said control means including means for increasing the amplitude of the signal output of the audio means when the output of the selective means increases.

11. A television receiver as defined in claim 9 in which said indicating means is a tuning indicator connected to the output of said selective means.

12. In a television receiver, an input circuit for producing in its output a limited band of frequencies and including tuning means for varying the frequency of reception, audio means for extracting from said band of frequencies any audio modulation existing in said band adjacent one end thereof, and means including a tuned circuit sharply peaked at a frequency in said band adjacent the other end thereof for increasing the amplitude of the output of said audio means when the current in the sharply tuned circuit increases.

13. A radio receiver for receiving a wave which has a carrier having a wide band of modulations on it together with an additional audio modulated signal the frequency

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of which varies within limits outside of said wide band, comprising in combination, tunable input means for producing in its output a radio frequency signal having both of said modulations on it, a detector for rectifying the output of said input means, a selector for passing said additional modulations, an amplifier for amplifying the output of said selector, selective means sharply peaked as compared to the width of said wide band and connected to said input means, said input means having an acceptance band just broad enough to include both of said modulations and the selective means being peaked to a frequency corresponding to the carrier frequency of said radio frequency signal when the tunable means is tuned to optimum position, and tuning indicating means controlled by said selective means for increasing the gain of said amplifier with increase in the output of said selective means.

14. In a television receiver for a television system in which a picture signal carrier is amplitude modulated and the complemental sound signal is transmitted as a frequency modulation of a second carrier, in combination, an amplifier, means for supplying said picture and sound carriers of a television signal to said amplifier, a detector supplied by said amplifier, and a selecting circuit connected between said amplifier and said detector and having a frequency characteristic such that both picture and sound carriers are passed to said detector, the two carriers being heterodyned with each other in the detector, means in the selecting circuit for modifying the characteristics of that circuit so that it is characterized by substantially zero slope over the range of frequency swing of the sound carrier and has an amplitude level below the minimum modulated amplitude of the amplitude-modulated picture signal carrier, whereby the output from said detector contains both detected video signals and undetected frequency modulated audio signals, and a detector responsive to the undetected signals to produce the audio signals, resonant means connected to said amplifier and peaked sharply to the picture signal carrier frequency in the output of said amplifier, and means for indicating the amplitude of the current flow in said resonant means.

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15. In a television receiver for receiving a television signal band consisting of an amplitude modulated video signal carrier and a related frequency modulated audio signal carrier, the two carriers being separated by a substantially fixed frequency difference, in combination, a selecting circuit adapted to be supplied with said signal carriers, said selecting circuit including means to cause the circuit characteristic to be such that the picture and the sound carriers of the same television signal band, as accepted, are amplified in an amplitude ratio of the order of 20:1, with substantially zero amplitude change of the audio carrier with frequency change, means for heterodyning and detecting said carriers to produce both a detected video signal and an undetected frequency modulated audio carrier, resonant means peaked sharply to the picture carrier frequency appearing in the output of said selecting means, and means for detecting and amplifying the said undetected frequency modulated audio carrier, the last-named means including means for increasing its gain when the output of said resonant means increases.

16. A television receiver for receiving a television signal band including an amplitude modulated image carrier and a related frequency modulated sound carrier spaced a substantially fixed frequency from the picture carrier, said receiver comprising means to select and amplify one such band of frequencies so that the amplitude of the sound carrier will be less than the amplitude of the image carrier at the maximum modulation of that carrier by the picture or image signal, means for heterodyning said carriers to produce a new carrier having a frequency equal to the frequency spacing of the image and sound carriers and for amplitude detecting the image carrier to produce image signals, demodulating means energized in accordance with the new carrier for producing audio signals, a tuning eye, resonant means peaked to the image carrier appearing in the output of the first-named means and connected to such output, and a rectifier connecting said resonant means to the tuning eye.

17. A radio receiver for receiving a wave which has a carrier having a wide band of modulations on it together with an additional audio modulated signal the frequency

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of which varies within limits outside of said wide band, comprising in combination, tunable input means for producing in its output a radio frequency signal having both of said modulations on it, a detector for rectifying the output of said input means, a selector for passing said additional modulations, audio means responsive to the output of said selector, selective means sharply peaked as compared with the width of said wide band and connected to said input means, said input means having an acceptance band broad enough to include both of said modulations and the selective means being peaked to a frequency corresponding to the carrier frequency of said radio frequency signal when the tuning means is tuned to optimum position, and means controlled by said selective means for effecting an indication when the selective means is being fed with signals whose frequency corresponds to the resonant frequency of the selective means.

18. A radio receiver as defined in claim 17 in which the last-named means is a visual indicator separate from the audio means.

19. A radio receiver as defined in claim 17 in which the audio means comprises an audio amplifier and a loudspeaker fed thereby, the means for effecting an indication including means for controlling the gain of said audio amplifier.

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APPENDIX D

Order Denying the Petition for Rehearing

United States Court of Appeals
FIFTH CIRCUIT
OFFICE OF THE CLERK

February 2, 1976

TO ALL COUNSEL OF RECORD

No. 74-1803 – Louis W. Parker v. Motorola, Inc.

Dear Counsel:

This is to advise that an order has this day been entered denying the petition ( ) for rehearing, and no member of the panel nor Judge in regular active service on the Court having requested that the Court be polled on rehearing en banc (Rule 35, Federal Rules of Appellate Procedure; Local Fifth Circuit Rule 12) the petition ( ) for rehearing en banc has also been denied.

See Rule 41, Federal Rules of Appellate Procedure for issuance and stay of the mandate.

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APPENDIX E

United States Court of Appeals
FOR THE FIFTH CIRCUIT

October Term, 1974

No. 74-1803

D.C. Docket No.
CA-EL-71-603 NCR

LOUIS W. PARKER,
Plaintiff-Appellee-Cross Appellant,
versus

MOTOROLA, INC.,
Defendant-Appellant-Cross Appellee.

Appeals from the United States District Court for the Southern District of Florida

Before TUTTLE, COLEMAN and SIMPSON, Circuit Judges.

JUDGMENT

This cause came on to be heard on the transcript of the record from the United States District Court for the Southern District of Florida, and was argued by counsel;

ON CONSIDERATION WHEREOF, It is now here ordered and adjudged by this Court that the judgment of the said District Court in this cause be, and the same is hereby, reversed in part and affirmed in part;

It is further ordered that plaintiff-appellee-cross appellant pay to defendant-appellant-cross appellee, the costs on appeal to be taxed by the Clerk of this Court.

Issued as Mandate: December 8, 1975

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